

Amateur Photographer



Lumix G1 vs G9

We find out how far mirrorless has come over the past decade

SPECIAL ANNIVERSARY ISSUE

Passionate about photography since 1884

10 years of mirrorless

How these light, versatile cameras changed everything

PAST: CSC timeline ● **PRESENT:** What to buy ● **FUTURE:** Coming soon?



Choosing the right system

Our guide to the **pros and cons** of every mirrorless camera brand

Setting up for success

How to **get the best** out of your mirrorless camera

Plus Edgar Martins ● Little owls ● Giant's Causeway ● Vanessa Winship ● Gami 16

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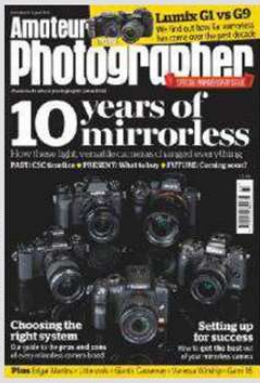
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When Panasonic launched the first mirrorless camera in 2008 it was widely believed that the market for these innovative cameras was the mass-market user who wanted to upgrade to something better than their point-and-shoot, but not a DSLR. As it turns out, the real audience was DSLR owners looking to lighten their load.

Over the past ten years the performance of these cameras has improved beyond recognition, and they are now challenging the pro market. With Nikon soon to reveal a full-frame system and Canon believed to be working on one too, this is a great time to look back at the journey mirrorless cameras have made and consider where they might be going.

Nigel Atherton, Editor



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ONLINE PICTURE OF THE WEEK



© AMAR SOOD

Holly Blue by Amar Sood

Sony A7R II, 105mm, 1/500sec at f/5, ISO 640

This macro shot was uploaded to our Twitter page using the hashtag #appicoftheweek. It was taken by photographer Amar Sood. He tells us, 'It was a hot day in the garden and my son and I watched intently as a beautiful holly blue butterfly settled on our lawn. I rushed inside to grab my camera and

was pleased to see the butterfly still there when I came back out. I approached it slowly and lay on my front to photograph it. Luckily the butterfly was happy to pose. I wanted to create a defocused foreground and background, so shot through the grass and used a large aperture, making sure I nailed the focus on the eye.'

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Via our online communities Post your pictures into our Flickr group, Facebook page, Twitter feed, or the gallery on our website. See details above.

Transparencies/prints Well-packaged prints or slides (without glass mounts) should be sent by Special Delivery, with a return SAE, to the address on page 26.



BBC Sky at Night Magazine, the contest is now in its tenth year.

Tianyuan Xiao's image (pictured), shows a thunderstorm lighting up the Florida sky in 2017. Tianyuan wanted to show the great contrast between stable (Milky Way) and moving (thunderstorm) objects in the sky.

Winners will be announced on 23 October, with the overall winner receiving £10,000. See rmg.co.uk/royal-observatory.

Words & numbers

*The eye should learn to
listen before it looks*

Robert Frank

Swiss-American photographer
and documentary filmmaker

40%

Increase in mirrorless camera
sales in 2017 compared to
the previous year

SOURCE: CPMA WWW.CAMONWATCH.COM

NEWS ROUND-UP

The week in brief, edited by Geoff Harris



Laowa announces 'Bug-Eye' lens

Chinese lens maker Venus Optics has announced the Laowa 24mm f/14 2x Macro Probe Lens. The company claims it can focus very close (2cm @ 2:1), but also achieve a unique wideangle 'Bug Eye' view. The lens covers a focusing range from 2:1 macro to infinity and has a waterproof front barrel (40cm). It also has a built-in LED light. Order now on Kickstarter, see <https://kck.st/2KduYzT>.

Colour Confidence masterclass

Colour management specialist Colour Confidence has announced a masterclass on how to best light, shoot and edit your photos, featuring top photographers Sanjay Jogia and Gavin Hoey. It takes place at Birmingham's Fazeley Studios on 21 September and costs £29.95, including lunch. Order tickets at bit.ly/ccbirminghamevent.



Fighting finches wins Wild World contest

An image of fighting finches has won the Wild World Photography Competition, organised by the Society of International Nature and Wildlife Photographers. Des Glynn from County Galway, Ireland, took the picture from a pop-up hide in his back garden, using a Canon EOS 5D Mark III with the Sigma 150-600mm f/5-6.3 DG OS HSM Sport lens.

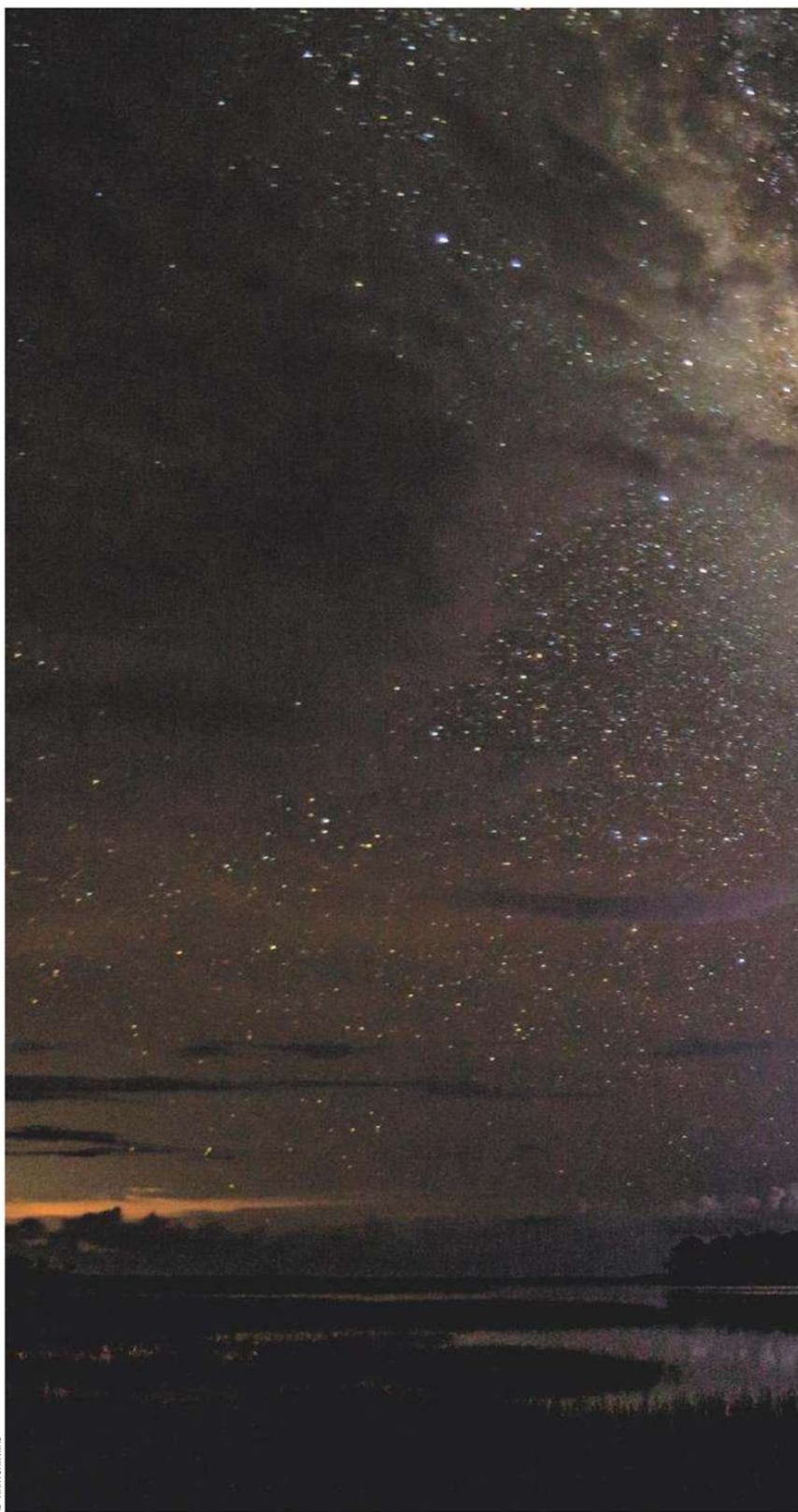
Huawei overtakes Apple in smart move

The strategy of the Chinese smartphone maker, Huawei, to focus on photography seems to be paying off. It says it is poised to become the world's number one smartphone maker by market share by the end of 2019. Huawei, which is effectively shut out of the US market over security concerns, has also overtaken Apple as the world's second-largest smartphone vendor behind Samsung.



FotoFest South event in Bath

Photo paper maker Fotospeed's FotoFest South event will take place at the University of Bath on 9 September featuring exclusive deals and the chance to test the latest kit. Speakers include Light and Land tutor Valda Bailey. Entry is free, while it costs £40 to hear the talks. See <http://fotofest.co.uk/foto-fest-south/>.



© JIANJIAN YAO

BIG picture

Astronomy Photographer of the Year 2018 shortlist revealed

As mentioned in 7Days in last week's issue, this year's Astronomy Photographer of the Year contest received over 4,200 entries from amateurs and professional photographers from 91 countries. Run by the Royal Observatory Greenwich, sponsored by Insight Investment and in association with



Canon's A3 PIXMA TS9550 printer promises photos with a 100-year album life

Canon unveils new printers and scanners

Canon has announced several new printers and scanners of interest to the serious photographer, including its first A3 all-in-one device, the PIXMA TS9550.

It uses five individual inks to deliver prints with a 100-year album life, claims Canon, and also features a 10.8cm touchscreen and an oversized copy feature to manage A3 documents. Booklets can be created straight from the printer's touchscreen. It goes on sale in November for £249.99.

Another new printer is the PIXMA TS8250 Series, an all-in-one A4 device with six individual inks that can rattle through 15 prints per minute. The company is claiming

it only takes 'seconds' to print a 4x6in borderless photograph, and it can be wirelessly connected to iOS and Android devices via the Canon PRINT app (Alexa voice control is also possible).

Other highlights include a 10.8cm touchscreen, two-way paper feed

and optional XL and XXL cartridges. Then there is the PIXMA TS6250 Series, with a 7.4cm touchscreen and five individual inks, which can also hook up to the cloud via PIXMA Cloud Link. Both these printers will be available to buy in September for £199.99 and £149.99, respectively.

Canon has also unveiled two new scanners. The CanoScan LiDE 400 is a flatbed device able to scan up to 4800x4800 dots per inch for high-resolution photos, while the lighter and more compact CanoScan LiDE 300 scans up to 2400x4800 dpi, which is more suitable for documents. They both go on sale in September for £69.99 and £49.99, respectively.

Last but not least, Canon has also announced the Zoemini, a pocket-sized photo printer for sharing 2x3in (5x7.6cm) prints from smartphones. It prints via Bluetooth and also hooks up to the Canon Mini Print app. The Canon Zoemini will be available from September for £119.99 and comes in a choice of colours. Early Christmas shoppers should take note.

The PIXMA TS8250 is an all-in-one A4 printer



Tamron reveals lightweight wideangle lens

Tamron will soon be releasing an ultra-wideangle zoom lens, the 17-35mm f/2.8-4 Di OSD, for full-frame Canon and Nikon DSLRs. The lens weighs only 460g, is 90mm long, and offers a fast f/2.8 aperture at the wideangle end, which goes down to f/4 when zoomed in. There are 15 lens elements in 10 groups with four low dispersion elements to minimise chromatic aberrations; the minimum focusing distance is 0.28m across the zoom range. The lens is moisture resistant, while a fluorine coating minimises the effects of dirt, moisture or fingerprints. In creating the lens, Tamron paid special attention to back lighting and the resulting ghosting that this may cause. The suggested retail price is £629.99, while the on sale date is to be confirmed.



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Major celebration of women in photography

The RPS (Royal Photographic Society) has kickstarted a major campaign called 'Hundred Heroines: Celebrating Women in Photography', with the aim of discovering women photographers whose work is currently overlooked, as well as celebrating better-known names. The campaign, which is timed to coincide with the centenary year of some women getting the right to vote, asks leading photography-industry figures and the public to nominate their modern-day photography heroines and to increase awareness of the impact women have made on our favourite art form. According to the RPS, photography remains a traditionally male dominated world.

'I come across so many amazing women in photography, and yet their voice is nowhere near as powerful as their male counterparts,' said RPS Vice President Del Barrett. 'Hundred Heroines is a major step towards this, raising public awareness of the excellent work being created by women.'



A photo from Loreal Prystaj's 'Fibers of Beauty' series. Prystaj is a Hundred Heroines nominee

Nominations close on 30 September 2018 and the final Hundred Heroines will be announced on 14 December, 100 years to the day since some British women first voted in a general election.

Each heroine will also be awarded a medal, named after Margaret Harker, the first female professor of photography in the UK and first female RPS president. Full details at www.rps.org/100heroines.

Travel-friendly superzoom compact from Canon

Canon has launched the PowerShot SX740 HS, a family and travel-friendly compact with a 40x optical zoom lens (24-960mm equivalent), 20.3MP CMOS sensor and 4K Ultra HD video



Canon's SX740 HS has a 40x optical zoom

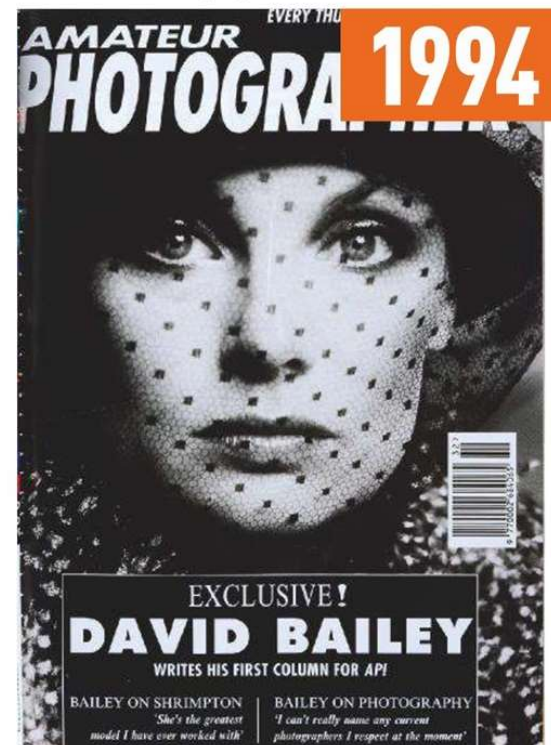
capabilities – the first time such features have appeared in a PowerShot device. The camera also includes a DIGIC 8 Image Processor, 5-axis image stabilisation, a 3in LCD screen that rotates 180° and continuous shooting up to 7.4fps. Photo sharing is made easy too via the Canon Camera Connect app for iOS and Android, and the camera has integrated Wi-Fi and Bluetooth connectivity. While there are some features for more-advanced photographers, you cannot shoot raw.

The SX740 HS goes on sale in August with a suggested retail price of £349.99.

For the latest news visit www.amateurphotographer.co.uk

Back in the day

A wander through the AP archive. This week we pay a visit to 1994



A mere £2.99 for the greatest photography magazine is very good value when you think about it and if you don't believe us, go back to 1994. It was £1.35 then, which, when you consider inflation, is not actually far behind today's money. What else gives you so much pleasure and education over the course of a week for £2.99? Anyway, we digress. This issue featured a new column by David Bailey, 1960s enfant terrible and a man now doing a very good impression of a pile of washing. While the cockney curmudgeon was generous in his praise of Jean Shrimpton – 'the best model I have ever worked with' – he was less effusive about his peers or contemporary photographers, a refrain he continues to this day. If Bailey's musings got too much, you could enjoy a tutorial on a psychedelic-looking effect called slide sandwiches, a guide to flash photography or a thought-provoking piece on war photography. Some Kodak Ektar film was up for grabs too. Film was still king in 1994 although the digital revolution was quietly fomenting under the surface.



David Bailey's column first appeared in AP in August 1994

Exhibition

Vanessa Winship And Time Folds

In her first major UK solo exhibition, **Vanessa Winship** reveals her fascination with place, history, memory and identity, as Oliver Atwell finds out

'Vanessa Winship: And Time Folds' runs at the Barbican Art Gallery in London until 2 September. Tickets are £13.50.

Fiction, borders, land, memory, desire, identity, history – all these are fecund ground for photography. How many project statements have you read that use these terms and variations thereof? But how many projects have you seen where these ideas spring instantly to mind with no prompting? This is Vanessa Winship's talent. Her images, through a strict economic and poetic sensibility, are able to convey her fascinations and preoccupations right there within the frame with no textual prompts. This exhibition – running at London's Barbican in conjunction with the Dorothea

Lange show, which we reviewed in AP 4 August – is Winship's first major solo show in the UK. Winship has been building her body of work since the 1980s, and now, with a number of solid projects under her belt, it's time to take stock and observe one of the most significant and fascinating figures on the photography scene.

Winship's photography has taken her on a series of diverse journeys. Back in the late 1990s, she lived and worked for 10 years in the Balkans, Turkey and the Caucasus during which time she created her incredible projects 'Imagined States and Desires: A Balkan Journey' and 'Black



Colleen, Lexington, Kentucky, from the series 'She Dances on Jackson'



© VANESSA WINSHIP

'Her images speak of hope and defiance in the face of imagined boundaries'

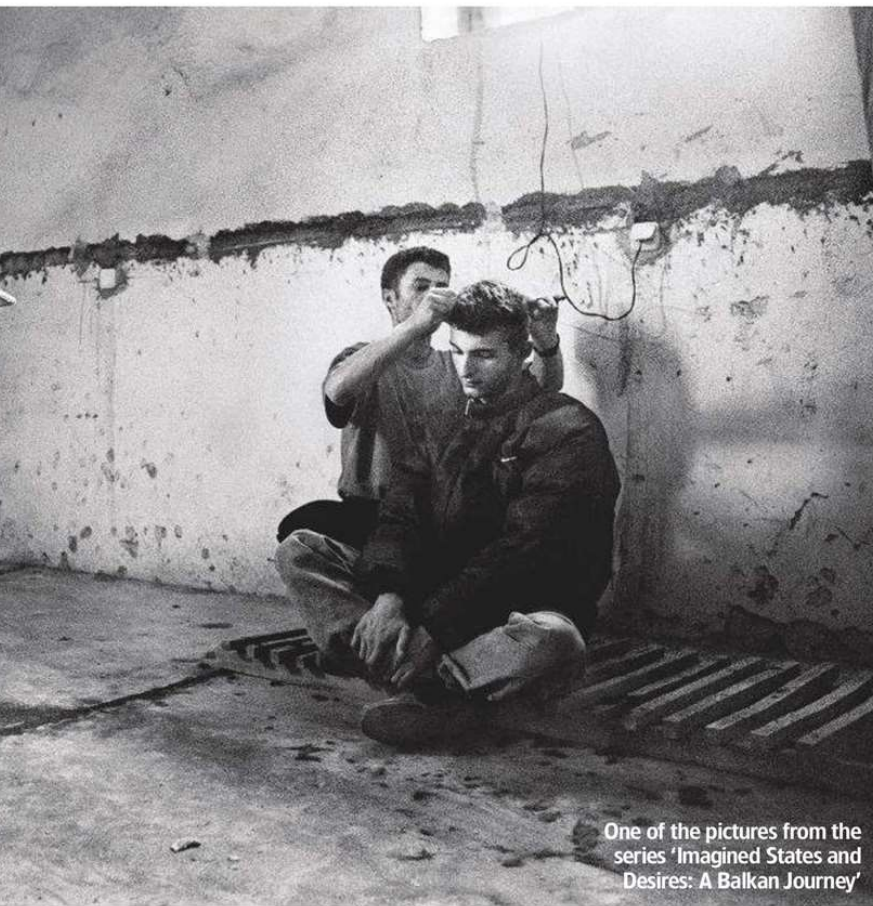
Sea: Between chronicle and fiction'. Following this, she created 'Sweet Nothings', a series of portraits of schoolgirls living on Turkey's eastern borders. With each black & white portrait, Winship strips away any visual flash or pretence. The images are formal and straightforward, and we are forced to focus on the individual details that make each girl so unique, be it the clothing, face or their gaze.

A tale of hope and defiance

Beautiful as these projects are, it's perhaps the next project that is her true masterpiece: 'She Dances on Jackson'. In 2012, Vanessa Winship, accompanied by her partner, the photographer George Georgiou, used a €30,000 grant to fund three consecutive trips across the USA.

It was during one of Winship's American trips that her father took ill and eventually passed away. It's a loss that looms over the project, particularly in the image of a flock of birds taking flight from the branches of a bare tree. Winship's father was an amateur ornithologist and the birds throughout her trip became a way to connect to his memory.

The quiet and melancholic images included in 'She Dances on Jackson'



One of the pictures from the series 'Imagined States and Desires: A Balkan Journey'

© VANESSA WINSHIP

A photo from the series 'Black Sea: Between chronicle and fiction'



© VANESSA WINSHIP/AGENCE VU

convey a sense that somehow Winship has been knocked a second or two out of sync with the rest of the world. Where she may expect to find people she simply finds traces of them, the aftermath: smoke, a parked car, the ripples on the surface of a pond. But what we're really seeing is one of the harder truths of the USA – that it is a territory so vast that when Winship eventually does encounter other people any notion of relief is countered by a feeling of alienation and solitude.

The title, 'She Dances on Jackson', comes from a fleeting, yet life-affirming encounter with a young dancing girl at a

train station. It's a tale that, like the unspoken sense of loss that Winship encountered during the project's inception, infects the images that have preceded it. With that in mind the images collected within 'She Dances on Jackson' say more than it would first appear. Perhaps her images speak of hope and defiance in the face of imagined boundaries. Ultimately, all of Winship's projects are about hope. Each project, each frame, offers more and more every time you look. And that makes Winship's work, all of it, a worthy investment of your time and contemplation.

AP

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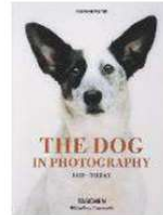
The latest and best books from the world of photography



© HARRY FIELD

The Dog in Photography: 1839-Today

By Raymond Merritt, Taschen, £15, 688 pages, hardcover, ISBN 978-3836567473



AS PERHAPS the world's most popular pet, dogs are an inevitable fixture in photography, particularly when it comes to social media platforms like Instagram. However, there is a rich history when it comes to photographic representations of our canine friends. Elliott Erwitt, for example, took copious images of dogs and released a series of heartfelt tributes to them in the form of a handful of books. In 2010, Tim Flach released his popular book *Dogs* that beautifully documented a range of breeds in a studio setting. In this book published by Taschen, Raymond Merritt explores how the dog has featured in photography throughout history. There are around 400 images here, ranging from the 19th century to the present day. Be warned, though, this is a compact book (around A5 size) and not one to show off on the coffee table. Rather, it's a perfect small present for the dog lover in your life.

★★★★★ Oliver Atwell

Backstage

By Just Loomis, Hatje Cantz, £45, 228 pages, hardcover, ISBN 978-3775744058



THERE'S SOMETHING undeniably fascinating about the world of fashion. It isn't necessarily the fashion itself, but the smoke and mirrors that goes into creating the illusion. Getting a glimpse behind the curtain offers a fascinating insight into the hurricane of preparation that goes into making that walk down the catwalk look cool and effortless. *Vogue* photographer Just Loomis first wandered backstage in the 1980s by accident, at a time when backstage was an unseen world. Since then, Loomis has travelled to Paris, Milan, New York and LA documenting how fashion comes together within seconds. These images reveal the craft that goes into transforming each model into a new persona every time they hit the walkway. *Backstage* is a strong collection and a great overview of Loomis's work.

★★★★★ Oliver Atwell



Viewpoint David Healey

Striking the balance between creative and technical photography remains an ongoing quest for many photographers

‘Anyone can take a picture, but not everyone can create a truly outstanding piece of art’

I was arrested by the photo on an exhibition poster. I had gone to buy bread, but my response to the monochrome image by Fulvio Roiter of the Venice I was walking through was, ‘I must see that exhibition. Who is this photographer?’

Why did I like his images? He had ‘the photographer’s eye’: he was curious, observed, and could see photographs where others did not, and frame and light his subjects in a way that would reveal and communicate. The exhibition catalogue alluded to his mastery of the subtleties of black & white film, uncompromising formal and compositional rigour, and technique rooted in contrast.

The more I researched him, the more I admired his work. One aspect of his background set me thinking. He was a chemist. His father’s advice was to research hydrocarbons. Instead, he persuaded his father to allow him to photograph Sicily. Roiter’s subsequent creative success, like many others whom we might unfairly stereotype as uncreative science-engineering types or technically challenged creatives, should not surprise us. Photography is at the interface of art and science. The ability not only to see images but also to compose, process and deliver them is needed. His scientific training undoubtedly influenced his work, but did not limit it. Perhaps it drove it?

Roiter cultivated his artistic ability in Venice. He went on to publish dozens of books and won a Prix Nadar. You can be a top photographer from any background, but it is the easiest art form in which to produce a result, and the hardest in which to establish your own style.

Returning home, I noted that I had more books on the technical aspects of photography than works by photographers. I have to counter my own bias: self-knowledge is a factor in improving our photography. Back at work, my art-teacher colleague and I discussed how we might help our Year 10 GCSE photography class to grow in both the technical and the artistic, especially the students who were stronger in one area and needed to compensate or strengthen their appreciation of and skill in the other. It is, of course, very hard to teach artistic visual perception (as it is to teach a student a work ethic).

We will use Joel Meyerowitz’s *Seeing Things: A Kid’s Guide to Looking at Photographs*, written to help young people understand how photographers transform ordinary things into meaningful moments. We will also emphasise the importance of monochrome: as Roiter said, ‘I have always considered black & white as the only yardstick for judging a photo. Colour can be arrived at by chance or by calculation; black & white, no.’

Fulvio Roiter: Photography 1948-2007 by Denis Curti, £45, is published by Marsilio on 28 August

Venice, Roiter’s home and frequent subject



David Healey ARPS chairs the RPS’s Analogue group and tutors photography at King Edward VI Aston and Handsworth schools. See www.facebook.com/groups/rpsanalogue/

In next week’s issue

On sale Tuesday 21 August



Story of the blues

Ever wonder how cyanotype photograms are made? Angela Chalmers tells us how



Europe’s best products

We reveal the product winners of the EISA Awards 2018-2019

Classics revisited

Find out how we recreated Jeanloup Sieff’s 1969 portrait of Catherine Deneuve

Grand designs

Justin Minns takes a close look at the 18th-century Dunham Massey

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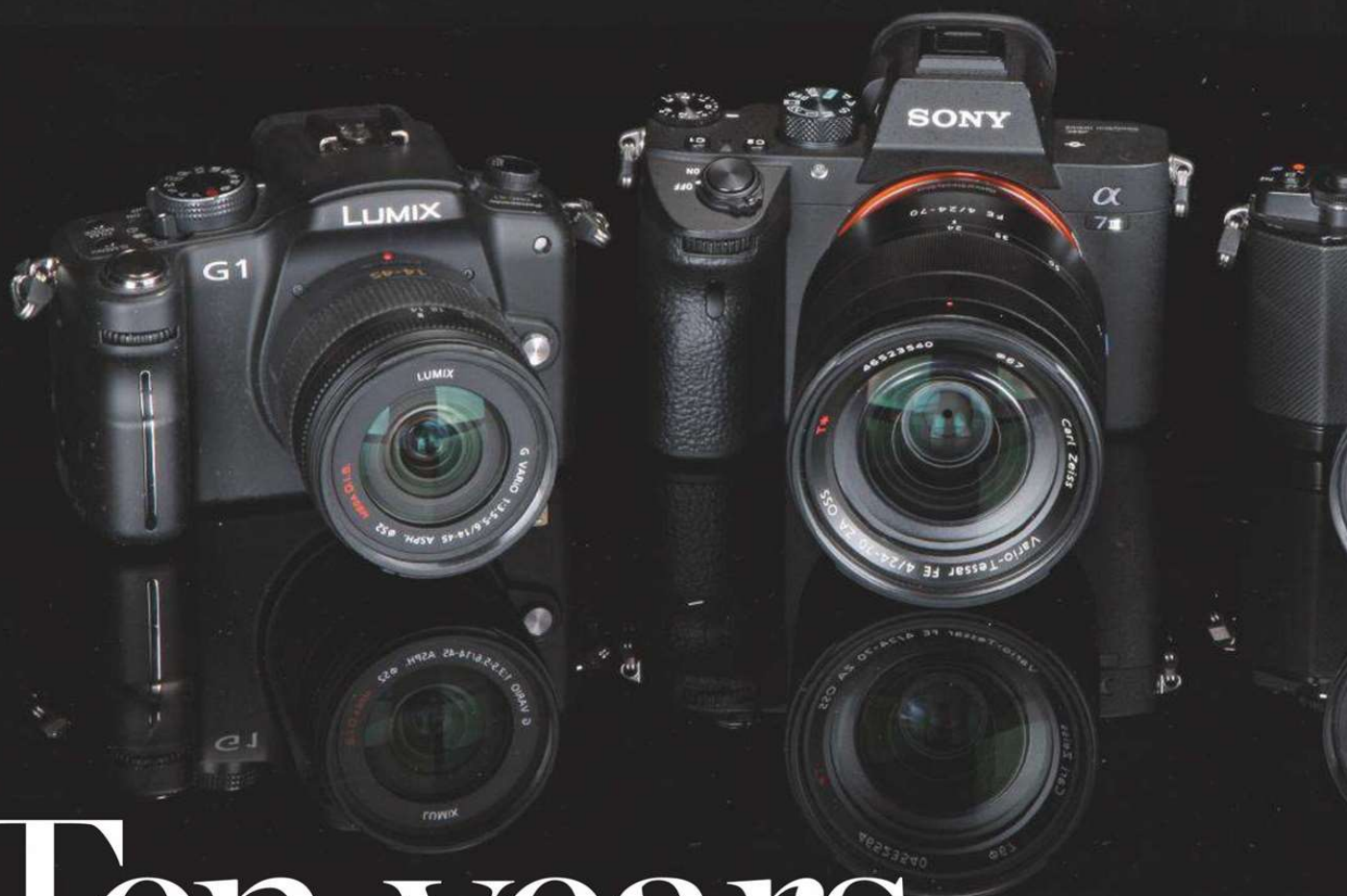


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Testbench THE HISTORY OF MIRRORLESS



Ten years of mirrorless

Andy Westlake recalls how mirrorless cameras have advanced and developed since their inception a decade ago

August
2008

Panasonic and Olympus announce the first interchangeable lens camera system that uses purely electronic viewing.



September
2008



Panasonic Lumix DMC-GH1
The world's first mirrorless camera had a 12MP sensor in a design styled like a miniature DSLR.

March
2009

Panasonic Lumix DMC-GH1 Panasonic launched its video-focused GH line by adding Full HD recording.



June
2009



Olympus PEN E-P1
Olympus's first Micro Four Thirds model kick-started the current fashion for retro design.

January
2010

Samsung NX10 The first compact system camera with an APS-C sensor was designed to compete with entry-level SLRs.





A decade of development:
Sony's latest Alpha 7 III
flanked by the Panasonic
Lumix G1 from 2008 and
the Olympus OM-D E-M5

Back in August 2008, Olympus and Panasonic sent out a dry, technical press release outlining a new camera system called Micro Four Thirds. In it, the firms explained how many people were put off buying DSLRs, finding them 'big, heavy, and difficult to operate.' They then described a new lens mount with a considerably shorter distance between the lens and the sensor compared to SLRs. This would allow cameras to be made smaller and lighter, and therefore, hopefully, more appealing to those non-buyers. But this left no space for a mirror to direct light to an optical viewfinder, and so the word 'mirrorless' was born.

It was clear from the start that this concept would have a profound influence on the future of photography. It had some key technical implications; most obviously, the cameras would need to use some kind of electronic viewfinder, either at eye-level or via a rear LCD. Both autofocus and metering would need to be carried out using the main image sensor, rather than the separate sensors used in DSLRs.

The big question was always going to be how well this all worked, and in particular, whether the autofocus could be remotely competitive with the phase-detection systems on DSLRs. We were all familiar with the contrast-detection autofocus found on compact cameras of the day, where it was usually slow and hesitant. It wasn't too long before we found out.

Little more than a month later, Panasonic showed off the Lumix DMC-G1: the world's first mirrorless camera. And not only did the G1 work, it performed beyond expectations. By establishing some key lens design innovations, such as the use of small, lightweight focus groups driven by fast, precise stepper motors, Panasonic made a camera that could react as fast as entry-level DSLRs of the time, at least with static subjects. But faced with any kind of movement, the G1 was easily defeated.

Unfortunately, there was always a nagging sense of the ordinary about the G1. If this was the future, why was it so dull? It looked just like the firm's rather nondescript L10 Four Thirds DSLR, and it couldn't even record video; we had to wait another six months for this, in the GH1. But while it felt strangely conservative, in design terms it got a lot right, and most mirrorless models now use a similar template with a central viewfinder and articulated LCD.

Development of mirrorless

Initially, it took a while for other camera manufacturers to follow Panasonic's lead. Even Olympus needed another nine months to show off its first model, the PEN E-P1. This debuted the second distinct body style that mirrorless cameras have adopted: by leaving out an eye-level viewfinder and employing an innovative retractable kit zoom, Olympus

What does 'mirrorless' mean?

VARIOUS labels for this kind of camera have been proposed, including compact system camera (CSC) and mirrorless interchangeable-lens camera (MILC). But for better or worse, the term 'mirrorless' is the one that's stuck. But this is awkwardly non-descriptive, with the result that it's often (erroneously) used to mean any camera that's not a DSLR. Put as simply as possible, a mirrorless camera must have interchangeable lenses and use the main image sensor for autofocus, metering and previewing the image via an electronic display. Crucially, this means the term doesn't apply to either rangefinder cameras, or those with fixed lenses.



May
2010

Sony NEX-5 Sony's tiny NEX-5 established a blueprint for simple, small-bodied cameras.



June
2011



Pentax Q Based around a tiny 1/2.3-inch sensor, this introduced Pentax's short-lived Q system.

September
2011

Nikon 1 V1 Nikon launched its ill-fated 1 system with this enthusiast model, alongside the basic 1 J1.



January
2012

Fujifilm X-Pro1 With its innovative X-Trans sensor this model kicked-off Fujifilm's X system.



February
2012



Olympus OM-D E-M5 The E-M5's tough, nostalgically designed SLR-style body influenced everything that followed.

Testbench THE HISTORY OF MIRRORLESS

Olympus's small, weathersealed E-M5 proved there was a market for high-end mirrorless



Like many early mirrorless cameras, Sony's NEX-5 series was aimed at casual users



The first mirrorless camera with an APS-C sensor: the Samsung NX10



made a flat-topped, 'rangefinder-style' design that was considerably smaller than the SLR-like G1. Unfortunately it was rather slow and unrefined in comparison, particularly regarding autofocus, but many photographers still fell for its compact form-factor and attractive retro design.

Samsung was next to join the party, with its NX10 in early 2010 – the first-ever mirrorless camera with an APS-C sensor. This likeable little camera offered a glimpse of what the format could offer, giving image quality that was a match for any similarly priced DSLR in a considerably smaller form. But despite continuing to release innovative products and build up an interesting line of lenses, Samsung never quite managed to grab the market share it deserved. It stopped making cameras altogether little more than five years later.

In those early days, mirrorless cameras were generally not seen as DSLR replacements, but as companion cameras that could offer similar image quality in a much smaller size. Some companies put a great deal of effort into promoting them as simple alternatives for people who wouldn't buy a DSLR, with Sony's first model, the NEX-5 of 2010, defining this idea. Indeed its influence was such that most mirrorless models released in the following three years adopted a strikingly similar design, with a tiny body, minimal buttons and dials, and a tilting rear screen.

However, such cameras faced increasing pressure from two directions. The casual users they targeted increasingly fell in love with

smartphones and their always-on connectivity for instantly sharing pictures, while enthusiasts looking for high-quality pocketable cameras were wooed by the new breed of 1-inch sensor compacts spearheaded by the Sony RX100. The camera type still survives, as the entry point to each manufacturer's line-up.

Mirrorless cameras finally found their feet in 2012, with the hugely influential Olympus OM-D E-M5 demonstrating that there was a real appetite among photographers for small, highly capable cameras. Fujifilm's X-Pro1 also showcased the ability of mirrorless cameras to be made in different shapes and sizes, with its rangefinder-inspired design and hybrid optical/electronic viewfinder. Most importantly, these two models showed that enthusiast photographers would be perfectly happy to shell out £1,000 or more for mirrorless set-ups that could meet their demands for image quality, durability and usability. As a result, the dominant approach now is to make true alternatives to DSLRs, with high-end performance and image quality.

Expanding formats

Perhaps the biggest breakthrough moment came towards the end of 2013, when Sony simultaneously released the 24MP Alpha 7 and the 36MP Alpha 7R: the first mirrorless cameras to use full-frame sensors. In truth, these initial models were somewhat unrefined, with oddly placed buttons, uncomfortable control dials and noisy shutters. But they met a long pent-up demand for genuinely small and

relatively affordable full-frame cameras, and launched Sony along the path from being just another player in a crowded market to the formidable force it is now.

Since then, much of the story of mirrorless has been the story of Sony, particularly when it comes to technological advances. The Alpha 7S brought unprecedented low-light sensitivity, while the Alpha 7R II showed how a well-designed sensor could combine high resolution with both huge dynamic range and low noise at high ISOs. But perhaps the biggest revolution came with the Alpha 9 in 2017. Previously, we'd assumed mirrorless cameras would never be able to rival DSLRs for sports and action



Sony's 36MP Alpha 7R brought full-frame image quality

July 2012

Canon EOS M Canon's first mirrorless camera was a simple, entry-level model that debuted the EF-M lens mount.



September 2013



Nikon 1 AW1 Nikon's rugged, waterproof model could be used up to 15m underwater.

October 2013



Sony Alpha 7 Sony changed everything by squeezing a larger full-frame sensor behind its existing E-mount.

January 2014

Fujifilm X-T1 Fujifilm covered its first SLR-style model with control dials, making it a huge hit.



April 2014



Leica T (Typ 701) A stylish camera with an aluminium body and superb touchscreen interface.



The Fujifilm X-Pro1 deliberately harked back to film-era rangefinders in terms of both styling and function

work, but Sony turned that on its head with an advanced sensor design that allowed silent continuous shooting at 20 frames per second while tracking focus on subjects moving almost anywhere in the frame, and with no viewfinder blackout. This surpassed even top professional DSLRs from Canon and Nikon, leaving Sony scrambling to produce lenses that could fully realise the camera's abilities – something it has only recently started to achieve with its FE 400mm f/2.8 GM OSS.

It's not only been Sony's party, however. Hasselblad introduced us to the world's first medium-format mirrorless camera in the shape of the 50MP X1D-50C in mid-2016,

with a surprisingly compact and elegant design. Meanwhile Fujifilm showed off its own GFX 50S a few months later, and has started to build up a serious professional system. Both cameras use the same 44x33mm format, and with Sony having recently introduced a 100MP sensor this size I'd be surprised if we don't see an X1D-100C and GFX 100S before the year is out. The likes of Fujifilm, Olympus and Panasonic have continued to make some extremely fine cameras too.

What of the big boys?

It won't have escaped readers' attention that two huge names are largely absent from this story: Canon and Nikon. The former has seemed reluctant to divert its attention away from its mainstream EOS DSLRs, with its mirrorless EOS M system including mostly entry-level bodies and a small range of unremarkable lenses. But recently it has shown signs of greater intent, and certainly has the key technologies in place to make a high-end model, most crucially its home-grown Dual Pixel CMOS sensors. Nikon got sidetracked with its consumer-oriented 1 System, but after four years, 11 bodies and 13 lenses, it quietly ceased any further development. It's now announced that it will be making a new full-frame mirrorless system with a completely new lens mount and an F-mount adapter.

The march of technology

Since Panasonic launched the G1, technology has moved on in leaps and bounds. The excellent Lumix DC-G9 is its direct descendant, although now aimed at a much more advanced segment of the market, and with a suitably inflated price (£1,499 body only, compared to the G1's £499 with a 14-45mm zoom). The two cameras are recognisably part of the same line, but their capabilities are worlds apart, with the G9 hugely improved in every imaginable way (see page 44 for the full story). The degree of advancement over the past decade is staggering, from all brands.

Naturally DSLRs have also improved, but at nothing like the same rate, if only because they were already so highly developed. The result is that the gap has narrowed to a point where mirrorless cameras are now just as good as DSLRs for almost any kind of photography. Last year we saw the launch of arguably the best all-rounder of each type yet made, in the shape of the Nikon D810 and the Sony Alpha 7R III, and it's barely possible to call one better than the other. They're just different.

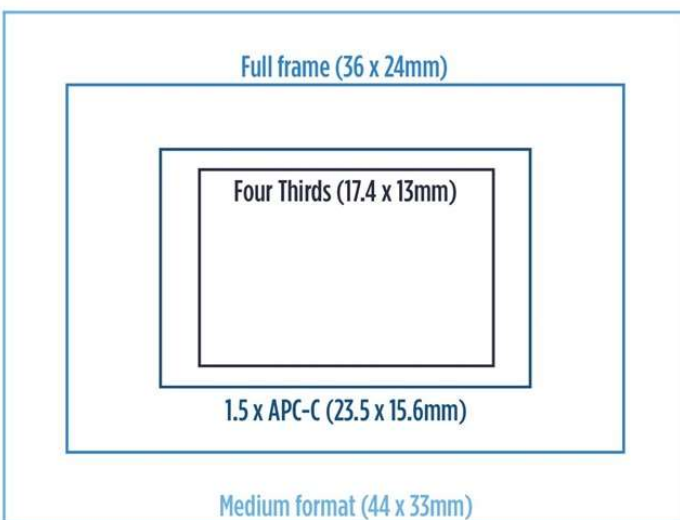
The evolution of autofocus

Arguably the biggest make or break factor for mirrorless systems, alongside image quality, was always going to be autofocus. Early cameras relied purely on contrast detection, which works extremely well with static subjects but can't deal with anything that moves. For this, the manufacturers have mostly found ways of adding phase-detection



Sony's Alpha 9 challenges the best professional DSLRs for sports and action photography

The sensor sizes now used in mirrorless cameras range from Four Thirds to medium format



Panasonic Lumix DMC-GH4
Panasonic's video-focused GH line gained 4K recording.



Samsung NX1 This technological tour de force could shoot at 14fps and record 4K video.



Sony Alpha 7R II With a stunning 42MP sensor this took mirrorless to a new level.



Leica SL (Typ 601) The SL's huge 'EyeRes' finder sets a new standard for electronic viewing.



Sigma SD Quattro Sigma's idiosyncratic mirrorless camera uses the firm's long-running SD SLR mount.

Testbench THE HISTORY OF MIRRORLESS



The Nikon 1 V1 was able to track focus on fast-moving subjects during high-speed shooting

pixels to the image sensor, which allows the camera to determine quickly how to move the lens to bring the subject into focus. In fact combining phase and contrast detection brings the best of both worlds, giving both speed and accuracy.

Perhaps the first cameras to really nail autofocus were Nikon's original 1 V1 and 1 J1 back in 2011. These featured on-chip phase detection and used lenses with lightweight focus groups, which enabled rapid adjustment. As a result these cameras could hold focus on a moving subject while shooting at 10fps, which was unprecedented at the time; indeed we'd be impressed even now.

Since then, almost all the camera makers have added phase-detection capabilities to their sensors, backed up by sophisticated subject-tracking algorithms. As is often the case, we had to wait for second-generation models to get real breakthrough performance with cameras like the Fujifilm X-Pro2, Sony Alpha 6300, and Olympus OM-D E-M1 Mark II. Canon's dual-pixel CMOS AF is also beginning to live up to its considerable promise. Panasonic, meanwhile, has stuck with its completely different Depth from Defocus approach, and has refined it to an impressive level on the G9. But once again it's Sony that defines the absolute state of the art with the Alpha 9. It's now really only entry-level models that still struggle with continuous AF.

It's all about the lenses

Alongside improvements in camera design has been some serious investment in building up lens lines. Fujifilm's XF system now includes 28 optics, while Olympus and Panasonic between them produce well over 50 Micro Four Thirds lenses. Sony only launched its full-frame FE line in 2013, but it already includes 23 lenses and assorted converters, while its APS-C E-mount range numbers 16. As a result, most enthusiasts will find that any of these systems should meet their needs. Canon's EF-M line-up is considerably smaller, but bolstered by the fact that its mirrorless models can use EOS SLR lenses via a mount adapter.

Third-party lens support has taken a while to materialise properly, but there are now signs that the big manufacturers are starting to come fully on board. Tamron was the first to make an autofocus lens for mirrorless as long ago as 2011, with an 18-200mm f/3.5-6.3 for Sony E-mount. The following year we saw a small flurry of APS-C format primes including Zeiss's Touit range for Sony and Fujifilm, and Sigma's compact, inexpensive f/2.8 DN line. More recently, Sigma has added a couple of nice 16mm and 30mm f/1.4 primes, too.

Over the past few years, though, it's been all about lenses for Sony's full-frame Alpha 7 range. Zeiss kicked off in 2014 with a couple of compact manual-focus Loxia primes, before introducing its autofocus Batis range the following year. In 2016 Samyang started a new line of autofocus full-frame FE lenses, while Voigtlander introduced some premium manual-focus primes, with a set of ultra-wideangles joined by a super-fast 40mm f/1.2. Tokina has adopted an unusual approach, with its Firin 20mm f/2 available in both manual focus and autofocus

All the main third-party lens makers are now catering for full-frame mirrorless, including Samyang and Tamron

'Most enthusiasts will find that any of these systems should meet their needs'

variants. Most recently Tamron has returned to the fray with the first third-party autofocus full-frame zoom, the 28-75mm f/2.8 Di III RXD. Sigma has adapted its Art primes for DSLRs by adding native E-mounts and full compatibility with Sony's advanced AF systems. There are now around 30 lenses for Alpha 7 users from established third-party makers.

Advantages of mirrorless

The most widely touted advantage of mirrorless technology is reduced size and weight. But there's a lot more to it than that. Because both autofocus and metering use the image sensor itself, they're more accurate and reliable than the separate sensors used in DSLRs. In particular, there's no need for the fiddly and time-consuming AF micro-adjustment settings that DSLR users often need with large-aperture lenses. The focus point can also be placed almost anywhere within the frame, and together with face and eye detection, this means that it's easy to get pictures in perfect focus every time.

Electronic viewfinders also provide an accurate preview of how your shot will turn out, while tools such as live histograms and



June
2016

Hasselblad X1D The world's first medium format mirrorless model has a 50MP sensor.



July
2016

Fujifilm X-T2 With intuitive dial-led operation and superb image quality, the X-T2 is a standout classic.



September
2016

Fujifilm GFX 50S Medium format mirrorless for professionals, with a removable viewfinder.



April
2017

Sony Alpha 9 Astonishing high-speed sports and action model capable of shooting at 20 frames per second.



October
2017

Sony Alpha 7R III Sony's fast, high-resolution full-frame model is a truly remarkable all-rounder.



electronic levels are a huge advantage for ensuring exposures are correct and horizons straight. EVFs can also provide a truly accurate depth of field preview, in contrast to DSLR viewfinders that get too dark at small apertures while providing a misleadingly deep representation of DOF with fast primes. The cameras can switch seamlessly between using the eye-level viewfinder and the rear screen, and with the flapping mirror eliminated, many models give continuous shooting speeds that SLRs can only dream about.

Where DSLRs still win

Despite the huge advances in technology, there are a few areas where DSLRs maintain an edge. On the whole, they're still better at tracking focus on moving subjects, particularly at the lower end of the market. Another advantage is battery life; DSLRs often achieve 1,000 shots per charge, but mirrorless cameras usually struggle to get past 350.

DSLRs tend to handle better too owing to the gradual refinement of control layouts and design over many generations. But this is purely about the manufacturer's experience, and again the gap is narrowing all the time. Photographers who need more esoteric optics such as long telephoto primes or tilt-and-shift lenses are also more likely to find them in Canon or Nikon's huge line-ups.

So what of the future?

Photokina, the world's biggest photographic trade show, is coming up at the end of September, and the major camera makers are all likely to reveal high-end products showing off their latest technology. A number of popular models are due to be updated, including the Fujifilm X-T2 and Olympus OM-D E-M5 Mark II, and we're fully expecting further improvements in autofocus, continuous shooting and video technology.

Of course, the most controversial question is whether mirrorless systems will eventually replace DSLRs entirely. Personally I'm sure they will; the main hold up is the deep investment most serious photographers have in their DSLR lens systems. Naturally many photographers are wary of this revolution, and some simply aren't prepared to accept that an electronic viewfinder could ever replace the optical one on their DSLR. But as the technology continues to improve, it's surely only a matter of time.

AP

The also-rans

AS WITH any new technology, it hasn't all been plain sailing, and some mirrorless systems have failed to gain enough traction to survive. Some went all-in for the 'small, simple cameras' paradigm and fell by the wayside when the market shifted decisively in the opposite direction, while Samsung's NX system was victim to a change in the firm's business strategy.



The Pentax Q was hamstrung by its tiny sensor

Pentax Q: 2011-2014

First up is the Pentax Q system, which was based around a tiny 1/1.7-inch sensor that's now practically obsolete, even in compact cameras. Four camera models were made, one per year from 2011 to 2014, along with eight lenses, half of which were inexpensive 'toy' designs. A telephoto macro was promised but never delivered. Unfortunately the system offered no real size advantage to offset its sub-standard image quality, and therefore quietly died.

Nikon 1: 2011-2015

Another one that never really took off was Nikon's 1 system, despite possessing remarkable autofocus and continuous shooting capabilities. Originally billed as being cameras for people who wouldn't normally buy cameras, Nikon never quite decided what kind of customer it wanted to target. The bodies and lenses were also very expensive compared to their peers, yet the 1-inch sensor gave inferior image

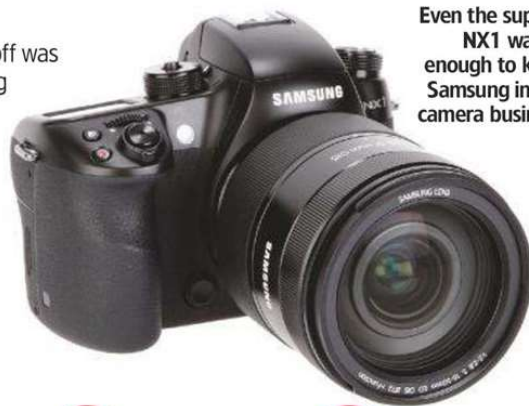


The Nikon 1 system suffered from high prices and a lack of direction

quality. In total the firm made 11 bodies and built up a system of 13 lenses between 2011 and 2015, but then quietly stopped development. All of the cameras are now officially discontinued.

Samsung NX: 2010-2015

The highest-profile casualty of all was Samsung's NX system. Despite launching the first APS-C mirrorless camera in 2010, building up a decent lens range including a remarkable 16-50mm f/2-2.8 zoom, and then releasing the astounding NX1 at Photokina 2014, the company quietly withdrew from making cameras the following year. This is a shame, as even today no APS-C camera has surpassed the NX1's all-round abilities. But it reinforces a brutal commercial truth; no matter how good they are, ultimately cameras need to sell well enough to make a decent profit for their manufacturers.



Even the superb NX1 wasn't enough to keep Samsung in the camera business

November 2017

Panasonic Lumix DC-G9

Panasonic is courting enthusiasts with this superb high-end model.



February 2018



Fujifilm X-H1

In-body image stabilisation comes to the X system in this fast, rugged pro-spec body.

February 2018

Canon EOS M50 This attractive little camera signals Canon is taking mirrorless more seriously.



February 2018

Sony Alpha 7 III A brilliant £2,000 all-rounder that matches any DSLR at the price.



July 2018



Nikon full-frame mirrorless

A teaser video and social media campaign reveals Nikon's intent to challenge Sony's dominance.

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Technique



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1 Light in the dark

Because mirrorless cameras show the impact of their exposure settings, you get a much clearer view of dark scenes than when using the viewfinder of a DSLR. This is especially useful for long exposure photography and when using a Big Stopper ND filter during the day.

2 Zebra patterns

Those flashing black and white stripes make it absolutely clear where the highlights are and (with the right customisation) how close they are to burning out. Helpfully, a mirrorless camera can show them in the viewfinder or on the screen and when you're shooting stills or video.

3 Viewfinder gridlines

We all need occasional help with composition, so the ability to see a grid in the viewfinder that marks out the 'rule of thirds' lines can be a bonus. Some cameras offer a collection of grids so it's worth experimenting to find the one that works best for you.

Making the most of mirrorless

Mirrorless cameras have a few tricks up their sleeves that DSLR users might not know about. **Angela Nicholson** explains how to access their full potential

**4 Live histogram**

Even with exposure preview, the ability to see a live histogram and/or the highlight and shadow warnings at the selected settings, enables you to extract every last scrap of dynamic range from the sensor and detail where you want it.



5 Electronic levels

A long time ago, I came to terms with the fact that I'm terrible at getting horizons level. Some high-end DSLRs are able to show a level in their viewfinder, but this is pretty standard with mirrorless cameras and it's usually one of the first things I activate when I pick up a new model.



Angela Nicholson

Former AP technical editor Angela Nicholson began reviewing camera gear in early 2004 and has used a huge range of kit in a wide range of conditions, often pushing it to extremes to test its limitations. Follow her on Twitter [@AngeNicholson](#)



6 Exposure preview

One of the biggest advantages that a mirrorless camera offers over a DSLR is that the viewfinder and screen show you the image with exposure settings applied. As well as helping you get the exposure 'right' this makes it easier to see the creative potential of over or underexposing the scene. So before you take the shot, consider experimenting with the settings to see what's revealed.

Technique



7 Aspect ratio

Shooting with the aspect ratio of the final image in mind usually results in a far stronger composition. While some DSLRs indicate the selected aspect ratio, a mirrorless camera can show it cropped without any frame lines and distracting areas beyond. You'll often find a choice of 3:2, 4:3, 16:9 and 1:1.

8 White balance preview and correction

The automatic white balance systems in modern cameras are pretty good, but they're not infallible. However, just like the colour settings, you can assess the white balance of your image in the viewfinder or on the screen of a mirrorless camera before you take the shot. It's especially useful when you set a custom white balance value or when you want to use the white balance adjustment controls.



9 No need to adjust

Image sensor-based autofocusing means that mirrorless cameras nail the autofocusing without the need for micro-adjustment whatever lens you mount to it. That means you will consistently get accurate AF even with fast lenses and subjects that are way off-centre.

10 Easy manual focusing

Features such as Focus Peaking (which highlights the areas of highest contrast), the ability to magnify the live view image and Fujifilm's clever Digital Split Image make it easier than ever to focus a lens manually. It's a revelation if you've only ever peered through an optical viewfinder when focusing manually.

11 Fast lens preview

Typically, DSLR focusing screens max out at around f/2.8 which means you don't get an accurate view of the depth of field with fast lenses. No such problem with a mirrorless camera. This is useful when you've splashed out on an f/1.8 or f/1.4 portrait lens.





13 Subject recognition

Mirrorless camera AF systems are becoming increasingly sophisticated making it easier to capture sharp subjects. Face detection is now commonplace, for example, and eye-detection focusing is appearing in more and more models, helping you get the most important part of your image razor sharp.

14 Depth of field preview

Let's be honest, a depth of field preview button on a DSLR is fairly redundant these days. It's far easier to take a shot and check the sharp zone on the back of the camera. With a mirrorless model, however, the camera can apply gain so the stopped-down view is bright enough to see and be useful *before* you take the shot. Some Panasonic cameras can even show you a shutter speed preview.

15 AF points close to the frame edge

The average mirrorless camera has way more AF points than a comparable DSLR. Those points also usually go much closer to the edge of the image frame so you can get your off-centre subject sharp without having to focus and recompose. In addition, having lots of points enables a mirrorless camera to track moving subjects around the frame.

12 Colour preview

Most cameras offer a selection of colour modes and filter effects, but their impact isn't visible in an optical viewfinder. The electronic viewfinder (EVF) of a mirrorless camera lets you see the colours as they will be captured before you take the shot. That means you stand a greater chance of getting the JPEG image looking as you want it at the shooting stage.





16 No change in AF performance

DSLRs have two autofocus systems: one for use with the viewfinder and one for use in live view mode. This can result in a dip in performance when you switch to using the screen instead of the viewfinder. There's no such issue with mirrorless as the AF system always uses the imaging sensor.



17 Silent shooting

Electronic shutters are becoming increasingly common in mirrorless cameras and it enables them to shoot completely silently. That can be a huge advantage as it allows you to shoot when a DSLR would be too intrusive – for example, during a wedding ceremony or at the point of serve in a tennis match. However, as sensors read out data line-by-line, using the electronic shutter can create visible rolling shutter effect in images from some cameras. This results in fast-moving objects, like a golf club mid-swing, bending like a banana. Sony's anti-distortion in the Alpha 9 does a great job of combatting the issue but other cameras still exhibit the effect.

18 High-speed shooting

Taking the mirror movements out of the equation means that mirrorless cameras are capable of high continuous-shooting rates. Nowhere is this more evident than with the Sony Alpha 9 and Panasonic Lumix G9, which both have a top rate of 20 frames per second (fps) with continuous autofocus and metering. With some other cameras the top rate is only possible when the focus is set at the start of the burst, but the rates are still higher than a comparable DSLR. The Olympus OM-D E-M1 Mark II, for instance, can shoot up to 18fps with continuous focusing or 60fps in single AF mode.



19 Multiple form factors

While their design allows a mirrorless camera to be smaller than a DSLR, there are a range of shapes and sizes available. The smallest tend not to have a viewfinder. Some come with chunky grips and optional battery grips if you like dual-grip handling. You can also choose between rectangular rangefinder-style mirrorless cameras with a viewfinder in a corner and SLR-style with the viewfinder in the centre of the top plate. There's a model to suit everyone, and it's worth looking at a range to decide the one that works best for you.

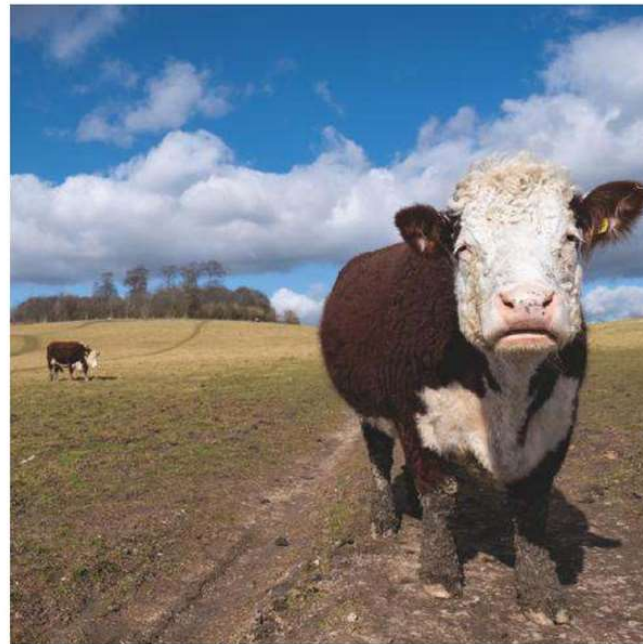


20 Seamless switching

Because mirrorless cameras operate in live view mode all the time, their performance is the same whether you're composing images in the viewfinder or on the screen. Many cameras even have a sensor that detects when the camera is held to your eye to switch between the screen and viewfinder. DSLRs need to move their mirror out of the way before you can see the live view feed and the usual dedicated exposure metering, white balance and autofocus sensors all become redundant as the image sensor takes on their duties.

21 Adapters

One of the problems with switching camera system is starting from scratch with lenses. However, there are quite a few lens adapters available to get around the issue, with simple mechanical and more sophisticated electronic options being on offer. Canon, for example, has the EOS EF-M adapter that allows you to use EF and EF-S lenses on its EOS M cameras while Sigma has the MC-11 available in Canon or Sigma mounts for people switching to a Sony mirrorless camera. Metabones also offers a range of adapters and Speed Boosters that have proved popular.



22 Better contact with your model

Thanks to their snappy performance and Face and/or Eye Detection AF, it often makes sense to use the screen to compose portrait images with a mirrorless camera. This allows you to interact with your subject, making them less aware of the camera and therefore more relaxed.

23 Better for mono photography

It takes time to develop the ability to look at a colour scene and translate it into a range of greys, white and black, and visualise which elements will stand out from others. It's easy with a mirrorless camera though. Once you've switched to Monochrome mode, the viewfinder and screen will show the scene in black & white, making it far easier to assess your composition. Also, if you shoot in raw and JPEG mode you'll have the full colour file to make a bespoke conversion along with a black & white image for reference and/or immediate sharing.

24 Panasonic 4K and 6K Photo

Mirrorless camera manufacturers are always finding new ways to get more benefit from the latest technology. Panasonic's 4K Photo and 6K Photo modes are great examples. These draw on the camera's video capability to shoot at fast frame rates and then simplify extracting a still image from the footage in-camera.



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LETTER OF THE WEEK



A spread from the article on boudoir photography in AP 28 July

Boudoir busted

C'mon fellas. Seriously? How many of your readers will be dipping their toe into the 'fastest growing area of photography in recent years' (*The art of seduction*, AP 28 July)? If I suggested to my wife that she should 'Keep her chin up, shoulders back and tummy in because it pushes out the bust', I would find myself sporting a brand new, hitherto unknown to the industry, bayonet mount. Keep up the otherwise good work.

Chris Glass

Your letter gave us a good laugh, Chris. It is my view that no genres of creative photography should be off limits to AP. While I don't expect many of our readers to try it, I know that some readers are members of sites like Model Mayhem and PurplePort and may like to give it a go. We also have a growing number of female readers for whom this genre could provide a potential business opportunity – Nigel Atherton, editor

Win! **SAMSUNG** The MicroSDHC EVO Plus with SD adapter 32GB Class10 UHS Grade U1 card will support 4K and has read speeds of up to 95MB/s and write speeds up to 20MB/s. www.samsung.com/uk/memory-cards/



Eyes to the left

Graham Lockerbie talks about a left-handed option for cameras (*Inbox*, AP 4 August), but what about people with a dominant left eye? I have a stronger left eye, so I hold a camera to view and focus

through my left eye, and as a result my nose always touches the back of the camera. This is usually no big deal, but it means lots of smudges on the display.

However, there was one camera that used trap focus on the rear

screen, and as soon as my snout touched it the focus point moved, as the camera thought it was my finger touching the screen to alter the focus point.

This was puzzling until I realised what was happening, but I really wish camera makers catered for people who used their left eye to view and focus.

Andrew S Redding

I too use my left eye for viewing and have the same problem with a greasy screen. On the other hand using my left eye means I don't have to close my right eye when I shoot, as it's hidden behind the camera. I'd be interested to hear other readers' views on left-eye vs right-eye shooting and whether this is perceived as a problem – Nigel Atherton, editor

Cibachrome film?

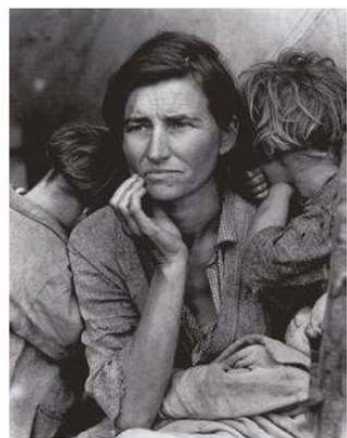
I just read the details of Jane Bown's photo during the shooting of a promo for *Penny Lane* (*Big Picture*, AP 4 August). The article mentioned that she used Cibachrome film – is this correct? Surely Cibachrome was a paper made by Ilford for printing from transparencies? I used to take photos in that era and don't recall a film type called Cibachrome (Ilford had Ilfochrome for transparencies) so what did she use: Kodachrome, Ilfochrome, Ektachrome? Just curious.

John Langham

Well spotted, John. Cibachrome was a positive colour printing process by Ilford for making prints from transparencies. I used it a lot in the late '70s and early '80s and it was vile stuff. The ultra glossy, super-saturated prints looked impressive at the time but the chemicals were noxious. We can find no record of there ever being a Cibachrome-branded film. We don't know which colour film she used, but we'll try to find out for you – Nigel Atherton, editor

Dorothea Lange

I agree with Oliver Atwell's review of the Dorothea Lange exhibition at the Barbican (*7 Days*, AP 4 August 2018). It is indeed 'a rare chance to see a major exhibition of such an icon's work'. My only reservation is that it is such a big exhibition there are almost too



Lange's 'Migrant Mother' has an interesting story about a retouched thumb in the lower-right corner

many amazing images to take in on a single visit. One thing in particular caught my attention – it was a small story associated with the 'Migrant Mother' image. I think it is interesting in its own right, but it also has something to add to the debate over where editing ends and 'cheating' begins.

It seems that when the picture was taken the subject, Florence Owens Thompson, had the thumb of her left hand hooked around the pole of the tent she was living in, and this was clearly visible in the bottom right-hand corner of the original photo. Apparently, this bothered Dorothea Lange to the extent that she removed it through retouching. This was only done after some copies of the unedited version had been released for publication, and so both versions were published. Examples of both are also on view at the exhibition. Nothing new under the sun?

Alan Cox

Old Elements works fine

Sometimes life really is too short to learn all the 'exciting' new features of the latest software... and having to pay for it. Did Kevin Harvey (*Inbox*, AP 4 August) try loading his old copy of Photoshop Elements 11 on his new Windows 10 PC before deciding to upgrade to Photoshop Elements (PE) 18?

When I had to buy a new PC in April this year, it made sense to move from Windows 7 to 10 before Microsoft stopped supporting Windows 7, which might cause antivirus software problems. Despite Adobe's claims about PE 7 not being 'supported' on Windows 10, I was unwilling to buy PE 2018 unless forced to do so. My 2009 CD of PE 7 loaded

on the Windows 10 PC in the same way it did on previous Windows XP and Windows 7 PCs, and worked perfectly. There have been some major Windows 10 updates since then, and it still works perfectly. All I have noticed is that if I accidentally click on 'Help' so that PE 7 attempts to find the relevant Adobe help page online, I may get a page for PE 11. And although my DSLR body is more recent than my copy of PE 7, because it can produce Adobe DNG format raw files, I can still use the raw software in PE 7 (this is not a lucky coincidence, but the result of buying a Pentax).

Chester Willey

Willy Lott's Cottage, Dedham Vale

I recently visited Willy Lott's Cottage at Flatford, Suffolk, and took the below picture with a Canon PowerShot G15 showing the cottage, mill pond and fishermen. It was the childhood home of artist John Constable (1776-1837) who became a landscape painter, and provided him with a setting for one of his most famous pictures, 'The Hay Wain', that was created in 1821 and is now in the National Gallery.

The location seems not to have changed since his day, but of course the picturesque, focal point of his painting was missing. Without the dog, wagoner, wagon and horse a photograph would have lacked atmosphere and purpose, had the fishermen not been present. Thanks to the boy in the foreground, the scene gains vitality, and a question comes to

mind: would photography have happened without Constable's concern with the play of light on landscape and his ability to reproduce it within his, masterly, compositions?

Patricia Lesley Stammers

Photography would certainly have been invented without Constable (I'm not sure Louis Daguerre even knew of Constable's existence), but it's probably safe to say that Britain's romantic obsession with pictorial landscape photography does owe more than a little to Constable and his contemporaries – Nigel Atherton, editor

New Nikon mount

My recent letter (*Inbox*, AP 19 May) suggesting that any move by Nikon to a mirrorless offering would not automatically mean the existing lens mount was 'a given' now looks like it is becoming a reality. Nikon has already teased the market with its intentions, and a new mount is part of the mix.

Loyal fans may well fall into two camps quite quickly. Those who will feel disappointed with the change – though an F-mount adapter will be offered – and those who will be attracted to a new concept from a trusted source. There is also the chance that fresh buyers might leave other brands if the specification has a strong enough appeal.

The gnashing of teeth and surfacing of strong viewpoints are inevitable. Such comments are certain to attract attention, but everyone should remember the pace of change in digital cameras has been remarkable in a few short years. It's called progress, though not everyone sees it in the same way.

Graham Ashton

You're right, Graham. Canon's technological prowess and resulting market dominance during the past 30 years can be attributed in no small part to its decision to ditch its old mechanical lens mount in favour of its electronic EF mount. Nikon would need to do the same thing if it wants its new system to be at the forefront of innovation and performance in the future – Nigel Atherton, editor



Patricia took this picture of the iconic Willy Lott's Cottage; the scene gains vitality from the boys fishing

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Giant's Causeway,
Northern Ireland's
first UNESCO World
Heritage Site

PHOTO ROADSHOW

A giant among landscapes

Giant's Causeway is an iconic Northern Irish location. Justin Minns explains how to make the most of its features

Perched on the shores of the wild North Atlantic Ocean in County Antrim, amid a dramatic landscape of rugged cliffs and crashing waves, Giant's Causeway is a stunning sight. Formed by volcanic eruptions 60 million years ago, these world-famous, mostly hexagonal, basalt stone columns became Northern Ireland's first UNESCO World Heritage Site in 1986.

For centuries, legend and intrigue has swirled around the 40,000 hexagonal pillars that tumble down the cliffs into the sea, inspiring artists and photographers alike. Legend has it that the columns formed as a result of Scottish giant Benandonner challenging his Irish counterpart Finn McCool to a fight. Benandonner is said to have turned tail before it got to the point of exchanging blows, destroying the causeway before he did so.

Justin's top tips

1 Wait until the end of the day to capture Giant's Causeway lit by golden-hour light, then stay to shoot with the colours of the setting sun as a backdrop. Bracket your exposures or use graduated filters to overcome the high dynamic range and don't pack up too soon, as colours can linger in the sky.

2 Take control of your shutter speed and use it to creative effect. Blur the water until it's smooth and milky, or just add a touch of blur to show movement. You'll need a sturdy tripod and a cable or remote release for sharp shots.

3 Don't just settle for shooting from eye level. Use a low viewpoint to emphasise the foreground or get up high and show the subject as part of a wider view.



Fact file

Giant's Causeway

Location On the B147 Causeway road, two miles north of Bushmills village. On-site parking is reserved for visitors admitted through the visitor centre.

Cost Free to National Trust members. Refer to the website for prices: www.nationaltrust.org.uk/giants-causeway.

Opening times The visitor centre is open from 9am to 7pm until 1 November, then 9am to 5pm thereafter. The coastline and coastal path is open from dawn to dusk all year round.

Photographing NT properties: Visitors to National Trust properties can take pictures out of doors for their own private use. Amateur photography (without flash and use of a tripod) is permitted inside some National Trust properties at the General Manager's discretion. The National Trust does not permit photography at its properties for any commercial or editorial use without first seeking permission from National Trust Images. Fees may be charged. (Licensing images of National Trust properties through professional image libraries isn't permitted). Requests to use any photographs for commercial or editorial use should be directed to images@nationaltrust.org.uk.

IN ASSOCIATION WITH **Panasonic** **LUMIX**

Shooting advice



Justin Minns

Justin is a landscape photographer and workshop leader who has been working with the National Trust for several years. His images have been widely recognised in photography competitions including Landscape Photographer of the Year. Visit www.justinminns.co.uk.

Slow down

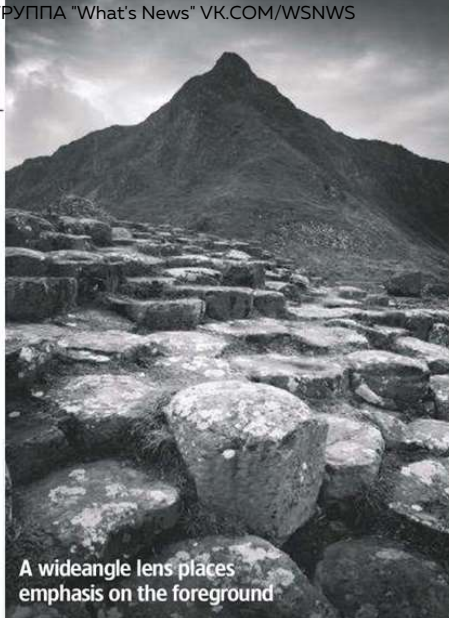
Using a slow shutter speed is a simple but effective way of increasing drama and atmosphere in seascapes. The key to a successful image lies in contrasting the blurred, moving water with an interestingly shaped and immovable object. The waves of the North Atlantic crashing against Giant's Causeway is a perfect example. By experimenting with different shutter speeds, it's possible to achieve a range of effects. Exposures of 1-2 seconds add a feeling of motion to the water while still retaining a natural look, whereas long exposures of a minute or more give that ethereal, smooth effect.

As light levels get low at sunset, the length of the exposure will increase, but neutral-density filters help control your shutter speed at any time of day. A tripod is essential when using slow shutter speeds, but don't forget a shutter-release cable, which is equally important when using bulb mode for shutter speeds longer than 30 seconds.

Stay late

The most popular times for landscape photography are sunrise and sunset, not only for the colourful skies but also for the golden hour of light that occurs just after sunrise or just before sunset. At these times of day, the sunlight passes through more of the atmosphere, which gives it a soft, warm quality, while the low angle of the sun brings out shape and texture in the landscape, adding a sense of depth.

As the sun sets, the contrast range between the bright sky and the increasingly dark foreground presents a technical challenge, the dynamic range becoming too great for the camera. Either use graduated ND filters to balance the exposure or bracket your exposures and blend them together in post-processing. After sunset, the cool blue tones of dusk are a great time for coastal photography. There's often an afterglow of colour in the sky, so don't pack up too soon.



A wideangle lens places emphasis on the foreground

Change your viewpoint

Most of us tend to take photographs from eye level, without even thinking about it, which is why many photos from well-known locations end up looking the same. Rarely is this the best option, though. Changing your viewpoint can dramatically alter the feel of the image and is a good way of avoiding the same shot as everyone else.

Getting down low, particularly when using a wideangle lens, places the emphasis on the foreground – a great way of adding a sense of depth to the image. The rocks here make a wonderful foreground, but don't go too low and allow the foreground to become dominant or block the view.

Finding a high viewpoint isn't always easy, but here, the Ulster Way, a 625-mile waymarked trail around Northern Ireland, passes along the cliffs above Giant's Causeway. It provides an expansive view of the rocks among the coastline. When shooting from a high viewpoint, pay attention to where you position the horizon. Including too much sky can detract from the very view you have climbed up to see.

KIT LIST



▲ Panasonic LUMIX DC-GX9

The compact, lightweight GX9 is ideal for a walk along the clifftops when space in the backpack is needed for a jacket and sandwiches. The articulated screen and viewfinder also makes getting down low less painful.



▲ Leica DG Vario-Elmarit 8-18mm f/2.8-f/4

Wide, fast and pin sharp from corner to corner, the 8-18mm is the ideal choice for low-viewpoint compositions.

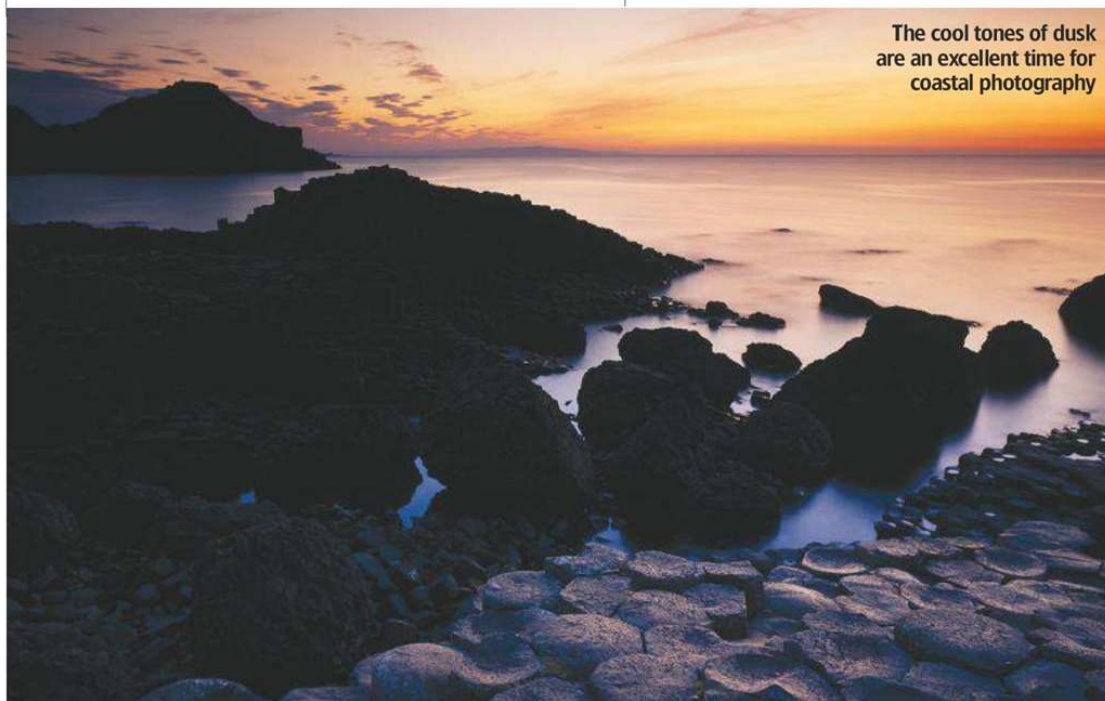


▲ Leica DG Vario-Elmarit 12-60mm f/2.8-f/4

With a flexible focal length of 24-120mm (35mm equivalent), this fast standard zoom lens would be useful for all the techniques that are outlined in this feature.

Tripod ▼

A sturdy tripod is recommended for landscape photography, but is absolutely essential for long exposures or shooting at dawn or dusk when shutter speeds are slow.



The cool tones of dusk are an excellent time for coastal photography

© NATIONAL TRUST IMAGES/JOE CORNISH



An intriguing detail of the basalt columns at Giant's Causeway

Join Panasonic LUMIX at Giant's Causeway

Come along between 10-4pm on 1/2 September

AS PART of its longstanding relationship as official photography partner of the National Trust, Panasonic will be holding events around a variety of stunning National Trust locations over the coming months. The team will be at Giant's Causeway on 1/2 September.

The awe-inspiring landscape of Giant's Causeway provides endless opportunities for photography. The Grand Causeway is the largest of the outcrops that make up this extraordinary location, but don't forget to also make your way to the Giant's Boot (size 93.5, apparently...) and the Wishing Chair – said to be rather comfortable, thanks to the number of people who've sat on it over the years.

On the weekend of 1/2 September, Panasonic LUMIX will be offering



© NATIONAL TRUST PHOTOS/PAUL WAKEFIELD

Photo opportunities galore: Giant's Causeway

visitors to Giant's Causeway the chance to try out its latest cameras and lenses, and to take advantage of expert advice. Normal entry fees (and photo restrictions) apply – see page 28 for details. To find out more, visit www.nationaltrust.org.uk/giants-causeway, call 028 2073 1855 or visit www.nationaltrust.org.uk/panasonic-roadshows.

How to get there

● **By car** Giant's Causeway and its visitor centre is located on the B147 Causeway road, two miles from Bushmills village, 11 miles from Coleraine and 13 miles from Ballycastle. If using satnav, the postcode is BT57 8SU. Parking on the site itself is only for those entering Giant's Causeway via the visitor centre. ● **By train** Regular train services operate from Belfast or Londonderry to Coleraine, then change to Ulsterbus Service 172. Visitors travelling this way receive a 'green discount' at the visitor centre. Don't forget, you can also arrive on foot, via the Causeway Coast Way.

National Trust photo competition

Capture nature at its best this summer for the chance to be featured on the cover of the 2019 National Trust Handbook or membership card. The theme is 'Our space to explore' and the closing date is 2 September 2018. For details (including terms and conditions) see nationaltrust.org.uk/photography-competition.



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ESTHER LING



ANDREW SCRIVEN

Reflections on mirrorless



SAMUEL ZELLER



TREVOR MOULD

Once shunned by professional photographers, mirrorless cameras now have some seriously high-profile fans, as **Tracy Calder** discovers. Here, four working pros share their insights and their images

MIRRORLESS PROS

Samuel Zeller

Fujifilm

Looking at Samuel's latest project – the exquisite book *Botanical* – it's hard to believe he only quit his day job to pursue a career in photography two years ago. Samuel has a natural eye for composition, but this has been honed via his work as a designer and graphic designer – he created retail spaces, editorial design and 3D visualisations for international brands for more than seven years. His parents, both artists, have also been a big influence.

Samuel decided to go mirrorless in 2012, shortly before a trip from his home city of Geneva to London. At the time he was managing a project called Lensblr on Tumblr, which served to connect photographers using the blogging platform. The purpose of his trip was to interview some photographers in the UK. 'I didn't have a camera, and I felt a bit silly going on the trip without one, so I looked into the available options,' he explains. Samuel had used a DSLR in a studio environment before, but found it rather big and clunky so decided to look for something smaller that he could carry around with him all the time.

His search ended with the Fujifilm Finepix X100. 'I mainly chose it because of its small size and look – it had a vintage feel that I loved,' he recalls, 'but I quickly

realised the image quality was surprisingly good too.'

Samuel currently uses a Fujifilm X-Pro2 and a Fujifilm X-T2. 'These cameras are powerful, yet small enough to carry around with three lenses when I'm on location,' he comments. (When he wants ultimate image quality he hires a Fujifilm GFX 50S medium format system.) For Samuel the camera needs to be an extension of his eyes, and his clean, graphic style requires reliable, user-friendly equipment. 'I love looking through the viewfinder and knowing what I see is what I'm going to get,' he says. 'I'm kind of lost when I look through an optical viewfinder.'

When it comes to lenses, Samuel uses just three for all of his work:

Many of the images Samuel creates look like paintings, rich in colour and content. This particular one was made in Edinburgh



ALL PICTURES THIS PAGE © SAMUEL ZELLER



The compact Fujifilm mirrorless cameras allow Samuel to respond to action quickly



Samuel Zeller is a freelance photographer specialising in editorial, architecture, travel and fine art. His new book *Botanical* is published by Hoxton Mini Press and is available now. See www.samuelzeller.ch.

the Fujinon XF 16mm f/1.4, Fujinon XF 35mm f/1.4, and Fujinon XF 50-140mm f/2.8. However, when pushed, he selects the 35mm as his favourite. This talented photographer declares he is '100% mirrorless, and always will be', but if he could have his way, Fujifilm would release an X100 with a built-in 35mm lens at f/1.4. 'That would be my dream camera,' he sighs, 'the one I would always have with me.'

SAMUEL'S KIT

Fujifilm X-Pro2
Fujifilm X-T2
Fujinon XF 16mm f/1.4
Fujinon XF 35mm f/1.4
Fujinon XF 50-140mm f/2.8

Two ONE Pro riders climbing the notorious cobbled stone section of the Lincoln Grand Prix back in May



Trevor Mould

Olympus

When Trevor was a teenager in the 1970s, his best friend's dad lent him an Olympus OM-1, and while he enjoyed using it he had no idea that 40 years later he would be hanging out of an Aston Martin clutching a mirrorless model – an Olympus OM-D E-M1 Mark II – and photographing riders for ONE Pro Cycling. Before making the leap to a compact system camera he used a Canon EOS 5D Mark II as it suited his needs as commercial director at Sussex County Cricket Club. Having seen how much the team spent on hiring photographers to cover press events and matches Trevor decided to have a go himself. He learnt the basics off YouTube and the rest on the job. He shot for the club for four years, before being introduced to cycling via a friend (former England cricket player Matt Prior).

Matt was setting up a professional cycling team (ONE Pro Cycling) and wanted Trevor to get involved. Four years – and more than 180

races – later, he's still part of the team, travelling around the world to record the riders in action. Despite his considerable experience he admits that shooting a fast-moving subject in a race is still challenging. 'You can't predict anything,' he laughs. 'Being a team photographer is different from being a general cycling photographer – there may be some real superstars like Chris Froome riding alongside you, but you're not interested in him, you're just trying to pick out your guys.'

To assist him in this challenge Trevor relies on the Olympus OM-D E-M1 Mark II (having recently upgraded from the Olympus OM-D E-M1). The team travels overseas a great deal and the convenience of carrying two bodies and six lenses in a backpack as hand luggage is a huge advantage. When it comes to lenses he uses everything from a fisheye to a telephoto. Aside from being light and compact, another great feature of the Olympus OM-D E-M1 Mark II (and its predecessor)

TREVOR'S KIT

2x Olympus OM-D E-M1 Mark II bodies
Range of Olympus PRO lenses, from an M.Zuiko 8mm Fisheye PRO to an M.Zuiko 300mm PRO telephoto



This is Emils Liepiņš straight after finishing the gruelling Melton Cycle Classic – a UCI 1.2 class race in April this year



Trevor Mould is the team photographer for ONE Pro Cycling. See www.mouldypix.com and @MouldyPIX on Twitter

is the image stabilisation. 'The IS in the E-M1 allowed me to fudge the rules of photography,' says Trevor. 'I could ignore the idea that your shutter speed should be double your focal length, which is great when you're wobbling around on your knees or lying down trying to get a low-angle shot.' When composing pictures at awkward angles the flip-out screen is also pretty handy. All in all, Trevor has found his mirrorless gear to be fast; light; and, crucially, reliable.



Andrew Scriven

Sony

At the age of 16, Andrew persuaded three friends to join him on a cycle ride that would take them from the Swiss Alps all the way back to London. This adventure whetted his appetite for independent travel, and it's a hunger he has been sating ever since. His desire to travel the world is matched only by his love of photography, and everywhere he goes he takes his camera equipment with him. At the beginning of 2010 he set sail on a three-mast tea clipper bound for Antarctica, and returned a year later having trekked the Himalayas, cycled the west coast of the USA, walked the streets of Jerusalem, and experienced the heady delights of the spring blossom in Kyoto. In short, he has been to the ends of the earth.

The trips Andrew takes tend to be longer than the average holiday, so the gear he uses needs to be light, reliable, and discreet. As a result, the decision to go mirrorless was a no-brainer. 'I went mirrorless because the systems are smaller and

lighter,' he confirms. 'I like carrying smaller bags, and from the start I was keen to embrace the new technology.'

Andrew started out with a Sony Alpha 7R, having been asked to trial the camera and provide feedback at the Sony World Photography Awards exhibition. 'I took it to Yosemite National Park and I was incredibly impressed by its size, weight, and the general



Andrew Scriven is a wildlife and landscape photographer who also makes some pretty fine films. See www.andrewscriven.co.uk and @AScrivenPhoto on Twitter.



The Silent Shooting mode on Sony mirrorless cameras allows Andrew to capture wildlife shots without disturbing his subjects

quality of the images it produced,' he reveals. 'The 36MP sensor was a considerable step up for me.'

Andrew now shoots with a Sony A7S, and finds it very versatile with excellent low-light performance. More often than not, he teams this body with a Sony FE 70-200mm f/4 or a Sony FE 35mm f/2.8 lens. 'The 35mm is small and light and I enjoy the focal length,' he explains. 'The 70-200mm is a great all-round lens for portraiture and wildlife, without being excessively large.'

For Andrew the unobtrusive and small nature of mirrorless cameras (not to mention their ability to shoot silently) is a real blessing, and allows him to take everything from candid street photographs to intimate portraits of wildlife. 'I enjoy seeing the exposure of the image before it is taken,' he adds, 'as well as the chance to adjust white balance and see the changes in real time.' Finally, there is the subject of video, which Andrew describes as 'wonderful' – high praise from a man who has seen it all.

ANDREW'S KIT

Sony Alpha 7S
Sony FE 70-200mm f/4
Sony FE 35mm f/2.8



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Esther Ling

Panasonic

Specialising in food, weddings and location portraits, Esther Ling is also a passionate blogger and Instagrammer. From her Food Diary and Instagram feed it's clear to see that she is a fan of available light, witty juxtapositions and eggs (including the chocolate variety). Her food arrangements are carefully considered, and yet many have the relaxed feeling that she might have just put down her fork and picked up her camera, before finishing her meal.

Esther's first mirrorless model was a Panasonic Lumix DMC-GX8, which she describes as 'portable yet sturdy, while delivering superb image quality'. For her food photography this was initially paired with either a Panasonic Lumix 20mm f/1.7 pancake lens or a Panasonic Leica DG Nocticon 42.5mm f/1.2 lens, the latter of which is still her preferred glass. 'The 42.5mm is supremely sharp and has a lovely wide aperture, which really suits my work,' she explains. You can see the effects in her colourful images of kiwis, blueberries and chunks of granola, all sharply focused, while the overspill is pleasingly softened and downplayed owing to the shallow depth of field.

Esther's more recent work has been shot with a Panasonic Lumix

Esther likes to shoot wide open, making the most of the shallow depth of field and allowing secondary elements to fall slightly out of focus



ALL PICTURES THIS PAGE © ESTHER LING



Esther prefers getting it right in-camera and using available light for her photos

DC-G9. 'It offers me all the quality and flexibility I need for my pro work,' she suggests. Where possible, she likes to get everything right at the time of the shoot, and spends a fair amount of time tweaking settings and refining compositions. 'I work predominantly with prime lenses so I know that if I haven't got what I want in the viewfinder I have to move my feet,' she explains. 'I set up where I know there is good light, and I just keep it simple.'

Esther learnt photography using 35mm film and has carried much of this knowledge over into her current practice. 'Using film gave me a good way of shooting, and I still try to get as much as I can right in-camera,' she reveals. 'I always say I'm not a



Esther Ling is a professional photographer and a passionate blogger. See www.estherling.co.uk, and @estherlingphoto.

massively "techie" photographer.' While she might not be a technophile, Esther has a natural eye for composition, and is an advocate of slowing down and noticing what's in front of you. 'I don't need to know the inner workings of the camera – I know what I need to know,' she explains. Although if she could have a word in the ear of Panasonic's development team, what she would really like is the features and settings of the G9 in the lighter, less bulky GX8 body.

ESTHER'S KIT

Panasonic Lumix DC-G9
Panasonic Leica DG Nocticon 42.5mm f/1.2 lens



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Driving technology

Edgar Martins has managed to combine the rigidness of machines with the lyricism of poetry. He spoke to Amy Davies about his project

You won 2nd place in the Professional Architecture category at the Sony World Photography Awards 2018. Tell us about the project.

The title of my project 'The Poetic Impossibility to Manage the Machine' was adapted from the title of the series I produced with the European Space Agency. It is part of an overarching, seven-year-long

project that engaged with environments as varied as hydropower plants, space facilities and car factories.

The projects go beyond mere documentation. For example, the one I produced with BMW at surface value surveys the fabrication, tooling and assembly of the modern day car, but it is much more than this. It is conceived around the

premise of 'slowing down time'. When I approached BMW, I asked them if we could stop production in order to make the relevant images. Much to my surprise they agreed, so the project was produced during enforced/scheduled production breaks. Car factories are the apotheosis of capitalism and mobility.

So I guess the project highlights a point of resistance: resistance to the world of flux and flow that we live in.

Is it difficult to gain access to the places in this series?



The paint shop at the BMW Group Plant in Munich, Germany



Edgar's work at the BMW factory was based on the premise of 'slowing down time'

Access is key – and it's not straightforward. In most cases it took months of research, meetings and negotiations before I could access these locations. But even when I was granted access by the relevant organisation's HQ, daily negotiation was required at a grass-roots level to get into the areas I wanted to shoot. Many of the people I engaged with were unfamiliar with my way of working and my goals and objectives. So I had to explain why I needed to be inside the clean rooms or at a touching distance from a multi-million-pound spacecraft.

What appeals to you about industrial photography?

Over the past decade, my artistic practice has been increasingly rooted in what I call 'hard-to-access environments'. I'm interested in the techniques of artistic



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What would be your dream assignment?

I don't know if I have a dream assignment. But if someone came to me and said we will help you organise, fund and facilitate a shoot anywhere of your choice, the explorer in me would probably say the Moon, Mars or in the extreme depths of the ocean.

What gear do you use?

Primarily a 4x5in and 8x10in Toyo Field Camera (analogue).

What made you decide to enter the SWPA 2018 with this project?

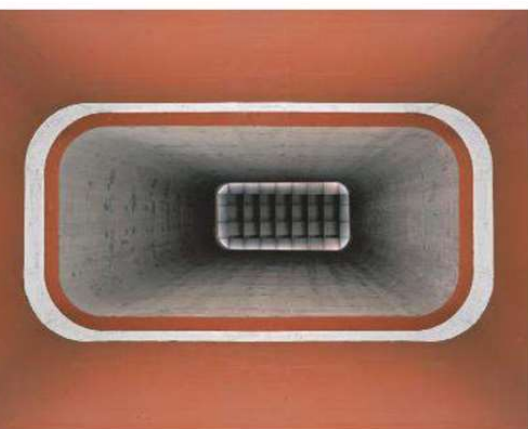
I felt I had a strong selection of material at my disposal, so I decided to enter the awards. I was encouraged that the judges felt the same way. These sorts of accolades and awards bring artists' work to the consciousness of audiences who perhaps we would not ordinarily be able to reach.

In this sense it's advantageous to win awards. Given that so much of what we do is a one-way dialogue with an audience, I think it's important to get feedback once in a while, whether it be positive feedback or constructive criticism. How else does one's work mature? How else can we challenge ourselves and do better?

What's next for you?

I'm working on a project with Grain [the arts organisation] in Birmingham. Using as a starting point a collaboration with HMP Birmingham (the largest, privately run, category B prison in the Midlands, UK), its inmates, and their relatives, my new work uses the social context of incarceration to explore the philosophical concept of absence and address a consideration of the status of the photograph when questions of visibility and documentation intersect.

AP



A hydroelectric plant takes on a surreal kind of beauty



Edgar's minimalist approach creates bold, impactful images

expression these collaborations activate and in the dialogue they provoke. My quest to understand these sorts of spaces has led to unique and groundbreaking collaborations with organisations such as EDP Energias de Portugal, UK Metropolitan Police Service, The European Space Agency, BMW and more.

What are the obstacles in this kind of photography?

The main challenge is to manage expectations and quickly assimilate the operational culture of the institution with which one is collaborating. There is also a need to communicate clearly and clarify at each stage of the process the vicissitudes of the

artistic process so one can get people on board, while also maintaining a certain critical distance from the organisation itself (so the project isn't seen as a PR exercise for the company in question).

Edgar Martins was born in Portugal, grew up in Macau, and moved to the UK in 1996 where he studied for a BA in Photography and MA in Fine Art in London. He has been exhibited in dozens of galleries, while several books of his work have been published. See more at edgarmartins.com.



Enter by 28 September 2018 at www.theiet.org/photo-competition #IETPhotoComp

Little owls use elevated perches to hunt from
Nikon D800, 600mm, 1/125sec at f/4, ISO 1600



When not out hunting, little owls will probably be resting high up in a tree
Nikon D800, 600mm, 1/125sec at f/4, ISO 1250

ALL PICTURES © OSCAR DEWHURST



WILDLIFE WATCH

Little owls

Little owls are often active during the day. **Oscar Dewhurst** offers his tips on getting close to this photogenic species

FIRST INTRODUCED to the UK in the 19th century by rich landowners who believed it would be a welcome addition to the country's avifauna, the little owl has colonised very well since the first successful recorded breeding in 1879 and is now widespread across most of England and Wales.

They are found across a range of habitats, including lowland farmland with hedges and small copses, parkland and orchards, where they use elevated perches such as tree branches, fence posts and telegraph poles to hunt from. Unlike many non-native species that are introduced to novel areas, the little owl seems to occupy a previously vacant niche, and has few negative effects on other species. To find them, head out on a calm evening and listen for their calls (you can find this out on

the website www.xeno-canto.org). Alternatively, scour exposed perches for a dumpy blob on the top!

At this time of year, the sun gets very high in the middle of the day. Although little owls are nocturnal, they will often spend this period snoozing high in a tree, so photography is hard. The other issue with this time of day is the harsh light, which means a greater risk of losing detail in dark and light areas. Doing your photography early in the morning or late in the evening reduces this problem, and means the light will be much more attractive. If you are out just after sunrise or before sunset, you can also experiment with backlighting, which can create images that stand out – something that is becoming more and more important with the volume of photos being taken.

KIT LIST

Wideangle lens ▶

Little owls use the same perches so there is the opportunity to try remote photography with a wideangle lens. First, watch to see their favoured perches and then move the camera in slowly to see if they accept it.



Binoculars ▶

I always carry my Swarovski binoculars with me, as they are invaluable for finding my subject, and watching other wildlife. They are particularly useful for locating little owls as they can often be surprisingly difficult to pick out against tree bark.



Oscar Dewhurst

Oscar is an award-winning wildlife photographer from London. Currently studying for a Master's in Biology at Durham university, he has photographed a wide range of subjects, ranging from urban foxes and bitterns to rainforest wildlife in the Peruvian Amazon. www.oscardewhurst.com



Shooting advice

Types of images

Little owls are often seen perched in exposed positions to give them a vantage point for hunting. This means they regularly use fence posts and telegraph poles, which can be unattractive for photography. However, they will use the same perches to hunt from, so to begin with watch from a distance and see if they have favoured areas. Then once you know their habits, you can position yourself nearby and wait for them to return. If the perches are low down it also gives you the opportunity to use remote photography with a wideangle lens. This can result in some very striking images with the owl and its habitat in the frame.

Camera settings

I tend to use very similar camera settings for much of my wildlife photography. The autofocus is always set to continuous, and my frame rate at its highest (7fps on my Nikon D850). Although little owls are often stationary, with the high resolution of today's camera sensors it is crucial to have the focus exactly where you want it. I will most likely be using single spot autofocus, to be as precise as I can with the focus location. Being light



Little owls are light brown in colour, which thankfully rarely causes exposure issues for photographers

brown, little owls' colour does not tend to be problematic for exposure, so I would lean towards using Aperture Priority mode. However, if the light is challenging, or if I am photographing against a particularly dark or light background, I will use Manual exposure, first metering off a neutral colour such as grass. If you are using this method, however, check the images and histogram to ensure you are not losing shadow or highlight detail.

About the little owls

Popular with photographers, little owls are the UK's smallest owl species. They are active in daylight and they can show remarkable tolerance to a close approach.

- **Location** Can be found in central, southern and south-eastern England and the Welsh borders.
- **Size** Length 22cm, wingspan 56cm.
- **Nest/burrow/den** Holes in trees, cliffs, walls, old buildings, river banks and even rabbit burrows.
- **Diet** Small vertebrates such as amphibians, reptiles, birds and mammals, as well as insects and earthworms.
- **Population** 5,700 breeding pairs.

Ten years on

A lot has changed in the past decade.

Michael Topham looks back at the Panasonic Lumix DMC-G1 and compares it to today's Panasonic Lumix DC-G9



I still remember the first time I set eyes on a digital mirrorless interchangeable-lens camera. It was towards the end of 2008, where in a stuffy meeting room I watched a velvet cloth lifted off the then-new Panasonic Lumix DMC-G1. I was told it would be a game changer, but was this marketing spiel or a pivotal moment in the history of

photography? The idea of creating a smaller camera by stripping out the mirror box, designing a new lens mount with short flange distance and equipping it with an electronic viewfinder, while keeping the design aesthetics of an SLR, was like nothing I'd seen before.

In an issue that's dedicated to celebrating the tenth anniversary of mirrorless, we thought it would be interesting to look back to remind ourselves of just how far things have come. What better

way of doing so than comparing the original Lumix G1 with Panasonic's best stills-focused mirrorless camera to date – the Lumix G9. As I'll come onto, it's astonishing how the advances in camera technology over the past ten years make the Lumix G1 look ancient in many areas of its performance and operation today.

Key features

From day one, Panasonic decided it'd use the same-sized sensor as

the original Four Thirds system. The benefit of using a Micro Four Thirds (MFT) chip as opposed to APS-C or full-frame is the ability to engineer smaller lenses to give the system a compact and lightweight advantage. The G1's 12.1MP Live MOS sensor is seen as fairly low resolution today and the G9's 20.3MP Live MOS chip has improved enormously since. This is most obvious when you study images taken side by side through the ISO range. The G1's offering of ISO 100–3200 is overpowered by the G9's ability to shoot between ISO 200 and 25,600 (expandable to ISO 100).

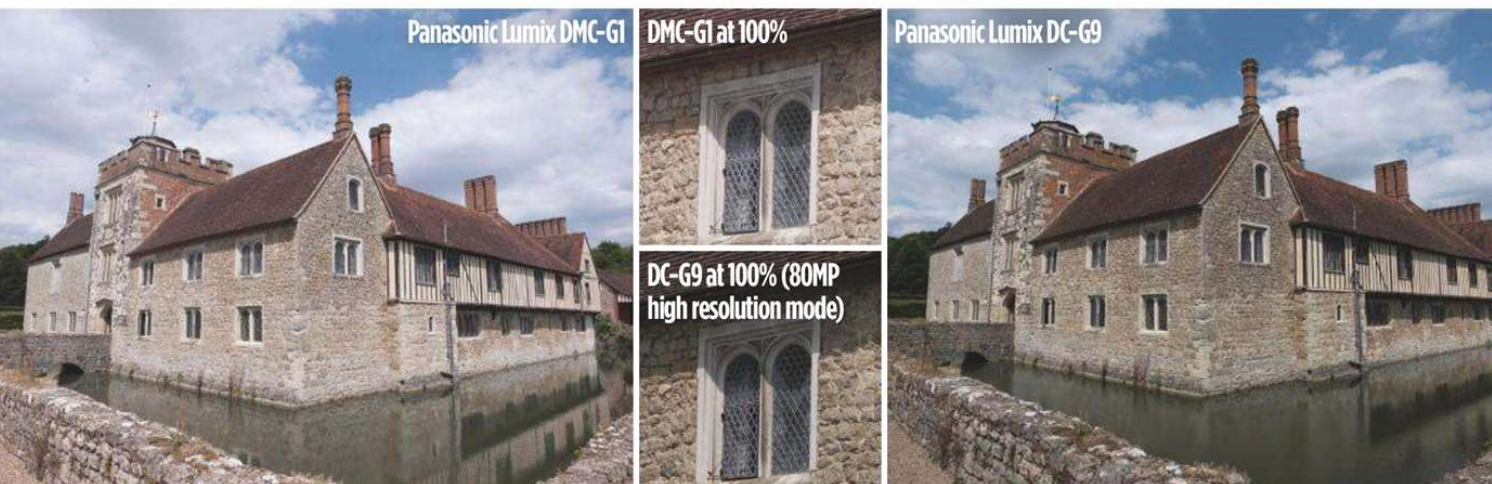
Speed is another area where today's cameras have skyrocketed. Back in 2008 the fastest the G1 could shoot a continuous burst was a measly 3fps. If you'd told me then that ten years later we'd be able to rattle out 50 raw files at 60fps on a camera that costs less than £1,500, like the G9, I'd have struggled to believe you. This is made possible thanks to the development of extremely powerful image processors and



The G9's larger footprint means there's more space on the top plate for an LCD display



The original Panasonic Lumix DMC-G1 from 2008 (left) and the current Panasonic Lumix DC-G9 (right)



Panasonic Lumix DMC-G1

DMC-G1 at 100%

Panasonic Lumix DC-G9

DC-G9 at 100% (80MP high resolution mode)

A 12MP image taken on the G1 at its maximum 4000x3000 pixel resolution

A high-resolution 80MP (10368x7776 pixel) resolution shot taken on the G9

the employment of an electronic shutter. The latter allows users of the G9 to shoot silently and push beyond the mechanical focal-plane shutter limit of 1/8,000sec right up to 1/32,000sec. On the G1 you can't use a shutter speed faster than 1/4,000sec and its mechanical shutter is fairly loud.

Another area where we've seen huge progress over the years is AF performance. While some

mirrorless rivals have embraced hybrid AF systems that take advantage of both phase-detect and contrast-detect AF methods, Panasonic continues to rely on its formula of contrast detection and Depth From Defocus (DFD) technology for focusing. The 23-area AF system on the G1 shows its age compared to the G9's 225-area AF. Resizing and shifting the AF point is now much

more precise on the G9 and many useful additions have been added such as custom-multi mode that lets you specify the number of grouped AF points and the formation they're arranged in.

Back in 2008 the G1's 3in, 460k-dot vari-angle screen was perfectly acceptable and double the resolution we were used to seeing on compact cameras. The G9's 3in, 1,040k-dot vari-angle

screen offers similar manoeuvrability with improved colour accuracy and sensitive touch functionality. Ten years ago, the G1's electronic viewfinder with its 1.44m-dot equivalent resolution, 100% coverage and 0.7x magnification set a new standard for EVFs in digital cameras. Like the G1's screen it isn't a patch on the G9's sensational 3,680k-dot EVF



Testbench THEN AND NOW



This rear view clearly shows the size difference. The G1, shown here on the right, has a dated menu system and considerably smaller buttons



today, which boasts a large 0.83x magnification and the option to set the refresh rate to 120fps for super-smooth, lag-free viewing. The biggest shock looking back at the G1 is the lack of any video mode whatsoever. Over the years we've seen the video spec of Panasonic's G-series cameras advance greatly to the point we're at now where we can extract 8MP stills from 4K footage at 60fps, or 18MP stills from 6K video at 30fps. The G9 is a far more versatile camera than the G1 originally set out to be and caters for a wider demographic that likes to shoot movies as well as stills.

Build and handling

My initial opinion of the G1 was that it was a well-put-together camera. It felt fairly lightweight, but robust enough for daily use. Picking up and using it again many years later reminded me that its grip is rather on the small side. In the average-sized hand your little finger has a tendency to fall off

the bottom, which isn't ideal. Switch over to the G9 and you immediately sense that it has more of a serious, high-end feel. Thanks to its beautifully sculpted grip and strong magnesium alloy chassis, the G9 handles superbly, both with small primes or heavier telephoto zooms. It has taken a while for camera manufacturers to realise that it's no bad thing for mirrorless cameras to be larger than smaller and the G9 is a perfect example. Its substantial grip allows it to house a bigger battery too. Compared to the G1's mediocre 330-shot battery life, the G9 allows you to shoot 70 more frames on a single charge. Like the G1, you can't charge the G9's battery in-camera via USB, but it can be removed and charged on the go with the DMW-BTC13 battery charger.

Whereas the G1 only has a single dial for adjusting shutter speed and aperture in manual mode, the G9 has two top-plate dials for independent control with

'It's fair to say the G9 is in a different league from the G1 in terms of build and handling'

thumb and index finger. There's also a scroll wheel at the rear to navigate menu settings and images in playback mode rather like you get on Canon DSLRs. On the subject of dials, those on the G1 are plasticky – and the same can be said for the buttons, which are too small and barely protrude from the body. The slanted shutter button on the G9 that's united with the on/off switch, rather than being offset from the mode dial like on the G1, is a welcomed ergonomic improvement. The access we're given to touch functions direct from the G9's touchscreen reiterates how much more personalised control we have today. Unlike the G1 that only has one customisable function button, the G9 offers no fewer than 19, with the option to set different functions in both record and playback modes. If I had to

name two of the best body improvements from an operational perspective, these would be the G9's joystick for shifting the AF point and the excellent top-plate display for glancing at exposure settings. Both are typically found on advanced DSLRs, and are must-have features for serious photographers.

It's fair to say the G9 is in a different league from the G1 in terms of its build and handling. In the ten years since the G1 arrived, Panasonic has sensibly refined the ergonomics, understood the importance of introducing dust/weather sealing to premium models like the G9, and instigated modern technology. Examples of the latter include touchscreen functionality and Wi-Fi connectivity, both of which are highly intuitive and are expected by today's audience.



Panasonic Lumix DMC-G1



DMC-G1 at 100%

DC-G9 at 100%



Panasonic Lumix DC-G9

This raw image was taken at the G1's maximum ISO 3200 sensitivity

An identical image from the G9 at ISO 3200 revealing the improved noise response



Panasonic Lumix DMC-G1

The G1 is poor at focus tracking and suffers badly from viewfinder blackout

Performance

As groundbreaking as the G1 was ten years ago, it wasn't without its pitfalls. With moving subjects in particular it really struggled. The way it plays back the last-but-one image during a continuous burst makes it virtually impossible to follow fast-moving subjects and capture them where you want them in the frame. Panning and tracking is real guesswork on the G1 and it's a similar story with the viewfinder raised to your eye. The EVF suffers from blackout for over a second after the first frame and bears serious lag. Today's incredibly powerful image processors have transformed the readout speed of image data from the sensor to the screen and EVF. On the G9 we're fortunate to have live view between frames, and with 20fps burst shooting with continuous autofocus and no viewfinder blackout, it's possible to keep up with and track even the speediest of subjects.

The improvement to the speed of continuous autofocus has also taken a giant leap from where things first began on the G1; so much so, that fast-performing premium mirrorless cameras like the G9 are now being chosen by professional sports and action photographers. The speed performance improvements on the G9 really are astonishing compared to the G1 and the same can be said of the output from the sensor. Not only does it render finer detail than the G1, it benefits from a hugely improved dynamic range and high ISO response. This is impressive given how many photosites are crammed on the same surface area. On the G1,

ISO 800 was about the limit you'd want to push to if you wanted to avoid detail loss and signs of horizontal banding in shadowed areas. Compare this to the G9, which I wouldn't be averse to pushing to ISO 3200 and as high as ISO 6400 at a push, and you start to appreciate how much better today's mirrorless cameras perform when challenged by tricky low-light situations.

Back in 2008, on the G1, image stabilisation was lens based and 5-axis in-body image stabilisation (IBIS) was unheard of. Another of the G9's key features is its 5-axis Dual IS II image stabiliser, which combines 2-axis stabilisation from the lens with 5-axis stabilisation in the camera to provide up to 6.5 stops of shake reduction when shooting stills or movies. There's more to it than the practical benefit of being able to shoot handheld at slow shutter speeds and capturing smooth video footage that looks to have been shot using a steadicam. The G9's image stabiliser combines with a high-resolution mode to capture 40MP (7296x5472 pixel) files or larger 80MB (10368x7776 pixel) files by shifting the sensor precisely between consecutive shots to create a single image with finer detail. The caveat is the short delay between frames, and with movement at risk of being blurred; this high-res mode is best used when shooting stationary subjects.

Conclusion

Although the Panasonic Lumix DMC-G1's specification and performance is poor by today's standards, it's important to acknowledge that it did a lot right



Panasonic Lumix DC-G9

The fast EVF refresh rate with no blackout makes tracking subjects a breeze

in terms of its form factor. It successfully delivered on its promise of SLR-like quality in a compact body and set the template as we know it for many of the beginner, enthusiast and advanced mirrorless cameras we've seen come and go over the past ten years. The combination of centrally positioned electronic viewfinder, pull out tilting screen and sculpted, rubberised grip is a winning formula and an avenue many camera manufacturers have explored in the quest of making

the most desirable mirrorless camera on the market. Though you might well argue the Lumix G80 is a closer match to the original G1 in terms of body size, price and the type of photographer it's aimed at, it has been fascinating to witness first-hand how far Panasonic's G-series has come from the very first example to the latest flagship model. If the next ten years of mirrorless is anything like the past decade, we're going to be in for quite a journey!



How they compare

Panasonic Lumix	DMC-G1	DC-G9
Sensor	12.1MP Four Thirds Live MOS	20.3MP Four Thirds Live MOS
Output size	4000 x 3000 pixels	5184 x 3888 pixels
Shutter speeds	60sec-1/4,000sec	60sec-1/8,000sec (mechanical) 1sec-1/32,000sec (electronic)
Sensitivity	ISO 100-3200	ISO 200-25,600 (standard) ISO 100-25,600 (expanded)
Metering	144-zone metering system	1,728-zone multi-pattern sensing system
Exposure comp	-3 to +3 EV in 1/3EV steps	-5 to +5 EV in 1/3EV steps
Continuous shooting	3fps	12fps (mechanical shutter) 60fps (electronic shutter)
Screen	3in, 460k-dot vari-angle	3in, 1,040k-dot vari-angle touchscreen
Viewfinder	1,440k-dot (equivalent) EVF with 0.7x magnification	3,680k-dot EVF with 0.83x magnification
Autofocus	23-area AF	225-area AF
Video	None	4K up to 60fps at 100Mbps
Media	Single SD slot	Dual SD slots (both UHS-II compatible)
Power	DMWB13PP Li-ion battery	BLF19 Li-ion battery
Battery life	330 shots (using rear monitor)	400 shots (using rear monitor)
Dimensions	124x84x45mm	136.9x97.3x91.6mm
Weight	360g with battery and card	658g with battery and card

Testbench MIRRORLESS SYSTEMS COMPARED



Masters of

Andy Westlake takes a look at the strengths and weaknesses of the mirrorless systems currently available on the market

Mirrorless cameras are soon to enter their second decade, but thankfully the various manufacturers haven't yet adopted identical approaches to building their systems. So while the two big DSLR makers have settled into offering simple entry-level APS-C models that gradually evolve into larger and more complex bodies before making the jump to

full frame, there's a lot more variety among their mirrorless counterparts. In part, this is because Canon and Nikon have yet to play their hands regarding 'serious' mirrorless, but it also reflects the fact that most of the other companies simply don't see full-frame as a yardstick against which everything else must be measured.

As a result, each manufacturer's mirrorless system has its own distinct

character. Canon's EOS M system feels somewhat entry-level, with basic camera designs and a definite paucity of interesting lenses. Thankfully the company is making promising noises about shifting towards a more enthusiast-focused approach.

Even Leica, with its reputation for conservatism, has developed a more compelling mirrorless system than Canon. It has two distinctly different APS-C body designs, in the shape of the stylish TL2 and the drop-dead gorgeous CL, backed up by a small but well-judged lens system that includes some really nice primes. Leica is also only the second firm after Sony

High-end mirrorless cameras may now all look like SLRs, but the various manufacturers' systems all have their own distinct identities



mirrorless

to offer a full-frame option.

If you want a really good APS-C system, the obvious choice is Fujifilm. Because the firm covers a full range from the entry-level X-A5 to the pro-spec X-H1 with the same sensor size, it's also able to build up the most interesting and comprehensive APS-C lens line-up. Rather than produce full-frame cameras, Fujifilm makes the GFX medium-format system; the only other company that has a similar offering is Hasselblad.

'Each manufacturer's mirrorless system has its own distinct character'

Olympus and Panasonic, through their use of the shared Micro Four Thirds standard, have jointly built up a massive system too. Again both offer a full range of cameras from entry-level to pro-spec, in both SLR-like and flat-bodied rangefinder-style designs. Both also have great lens line-ups ranging from tiny primes to absolutely top-notch zooms. Panasonic has developed a reputation for being more video-focused, with Olympus appealing more to the traditional stills shooter.

However it's Sony that seems to have caught most photographers' imaginations. Not so much for its APS-C line-up, with its relatively uninspiring camera designs and consumer-focused lenses, but instead for its superb and ever-improving full-frame Alpha 7 range. However its lens line-up is biased towards large, heavy and expensive premium optics that aren't always an ideal match for its small cameras.

One name conspicuous by its absence here is Nikon. Its ill-fated Nikon 1 system may be no more, but all eyes are on what the firm does next, with its eagerly-awaited upcoming full-frame mirrorless system. ➤

Canon

The EOS M system has just a few native lenses, but uses some clever technology

CANON was a late entrant to the mirrorless market, with its original EOS M appearing in June 2012. It tapped into the then-prevalent idea that mirrorless cameras were for people who wanted to take higher-quality photographs, but were intimidated by the bulk and complexity of DSLRs. That philosophy still lives on in Canon's range, with the entry-level EOS M100 being a direct spiritual descendant.

While the EOS M100 is very affordable, it lacks a viewfinder and relies mostly on touchscreen operation. We'd give it a miss and recommend the EOS M50 instead, an attractive little SLR-like design with a built-in electronic viewfinder and fully articulated screen. Its main limitation is that it uses a single control dial, although this is complemented by Canon's excellent touch interface.

If you prefer a more engaging shooting experience then the EOS M5 fits the bill, with its brilliantly conceived four-dial interface putting most other cameras in the shade. But this two-year-old design lags behind the EOS M50 in other respects while costing £300 more; for instance it has a tilt-only screen, and can't display a live-view feed between frames during continuous shooting.

Canon's native EF-M lens range is disappointingly small: a grand total of five zooms and two primes, all of which are designed mostly for compact size.

However they cover the basics, from 11mm wideangle to 200mm telephoto (or 18–320mm equivalent), with the tiny but sharp 22mm f/2 pancake being the pick of the bunch. However you won't find any premium constant-aperture zooms or fast primes.

SLR lens compatibility

The saving grace is that Canon's latest mirrorless models can use lenses made for its EOS SLRs almost seamlessly via a mount adapter, thanks to the fully electronic design of the EF mount and the firm's Dual Pixel CMOS AF



Canon's latest EOS M50 may signal a new focus on its mirrorless EOS M system



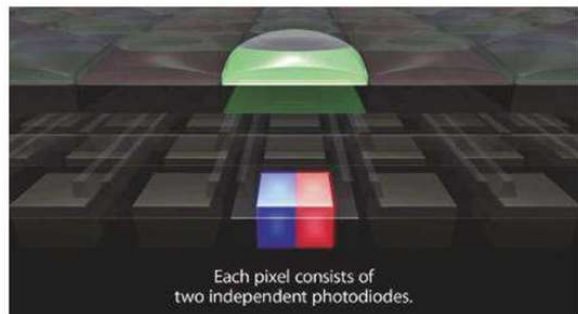
Canon's mirrorless cameras can use EF-mount SLR lenses seamlessly

Key technology

Dual Pixel CMOS autofocus

CANON is one of the few camera companies that can make its own sensors, and as a result is able to employ its own technologies. The most important is Dual Pixel CMOS autofocus, which enables fast, accurate autofocus for stills photography, along with smooth, controlled focus pulls when recording video.

Dual Pixel AF works by splitting each pixel into two light-receptive photodiodes, facing left and right. This allows phase-detection autofocus practically anywhere in the frame, aside from the extreme edges where measurements become unreliable owing to lens vignetting. When the photograph is taken, the signal from the two photosites is combined to produce the final image file.



Each pixel consists of two independent photodiodes.

Dual Pixel AF CMOS sensors have two photodiodes per pixel

technology (see box, right). This isn't limited to the latest Canon lenses either, but includes those of almost any vintage and brand. So EOS DSLR users can add a mirrorless body and continue to use all of their existing lenses. What's more, cheap adapters such as the £25 Meike MK-C-AF4 work just as well as Canon's £130 Mount Adapter EF-EOS M in terms of lens operation, with autofocus, image stabilisation and aperture control all working normally. However the latter is considerably better designed and built.

Fujifilm

The most complete APS-C system on the market is a joy to shoot with too

FUJIFILM has built its X-system entirely around the APS-C sensor size, with a wide range of camera types and an extensive, really well-considered lens line-up. Almost any photographer should be able to find what they need in here somewhere.

There's a choice of camera types through almost the entire system. The flat-bodied designs begin with the viewfinderless X-A5, through to the enthusiast-friendly X-E3 with its corner-mounted electronic viewfinder, to the high-end, rangefinder-inspired X-Pro2. Meanwhile the firm's very likeable SLR-style models start with the new X-T100, through to the mid-range X-T20 and hugely capable X-T2, to the top-of-the-range X-H1. The latter is the only X-system body so far with built-in image stabilisation, but many of the lenses are optically stabilised.

Analogue magic

Aside from the entry-level X-A5 and X-T100, Fujifilm's cameras are designed around control layouts inspired by mechanical film cameras, with analogue shutter speed and exposure-compensation dials on the top plate. These work in concert with traditional-looking (although electronically operated) aperture and manual-focus rings on most of the lenses. This means Fujifilm cameras provide an unusually engaging shooting experience, especially with the charismatic X-T2, which adds extra dials to control almost every key setting.

Without the distraction of having to accommodate two sensor formats behind one mount, Fujifilm has also built up



Fujifilm's cameras are mostly based around analogue control dials

probably the best APS-C lens range currently available. Inexpensive kit zooms wear an XC badge and forgo aperture rings, while the bulk of the range uses the XF designation. Most of the company's recent designs are labelled WR to denote weather resistance, including its lovely set of compact f/2 primes.

The 26-strong lens line-up covers focal lengths from 10mm to 400mm (15mm to 600mm equivalent), and unusually includes more primes than zooms. Refreshingly Fujifilm hasn't simply parroted focal lengths that were popular with 35mm film, but has also made less-familiar-sounding options such as 23mm and 56mm primes that do the job of 35mm and 85mm lenses, respectively. Alongside a mix of affordable zooms and premium f/2.8 upgrades, there are also some attractive specialist optics. For example the XF 56mm f/1.2 R is a large-aperture portrait lens that comes in two versions, with the APD option incorporating an apodisation element for smoother background blur. Meanwhile the XF 80mm f/2.8R LM OIS WR Macro offers close-up shooting with 1:1 magnification.



Fujifilm's superb X-T2 is one of the finest APS-C format mirrorless cameras

Key technology

Film simulations

ONE AREA in which Fujifilm cameras particularly excel is colour rendition, owing to its excellent film simulation modes. As the name suggests, these draw on the firm's decades-long experience of colour science, with the various modes aiming to replicate the look of various classic film stocks. Alongside general-purpose modes such as Astia, it offers a pair of soft, muted Pro Neg colour profiles that are ideal for portraits. Those who enjoy shooting in black & white should also really appreciate the Acros mode that's available in its higher-end models powered by the X-Processor Pro. For many photographers these provide such attractive JPEG output that there's less need to rely on raw.



Fujifilm's film simulation modes give superb colours direct from the camera

Olympus

The charismatic OM-D cameras are complemented by a superb lens range

OLYMPUS was the second manufacturer to make a mirrorless camera, with its original PEN E-P1 of 2009 being based around the Micro Four Thirds standard jointly developed with Panasonic. Initially it made flat-bodied, viewfinderless cameras, but its moment of epiphany came with the hugely influential OM-D E-M5 in 2012, which sported an unashamedly nostalgic SLR-style design. Olympus now concentrates mostly on the OM-D range, reserving the PEN moniker for its entry-level E-PL range and the stylish but expensive PEN-F.

With the Four Thirds sensor being about 60% the area of APS-C, and a quarter that of full-frame, it's inevitably always lagged behind a little in terms of image quality. To counter this, Olympus has decided to play to its strengths and establish specific selling points of its own. Its cameras are small, tactile and handle well, while delivering really attractive colour rendition in their JPEG output. The firm has also made a point of exploiting the possibilities of fully electronic viewing with some unique features such as in-camera perspective correction previewed in real time, and clever long-exposure modes that let you watch the image build up during shooting. With its most recent models it's also tried to make these much easier to access and use.

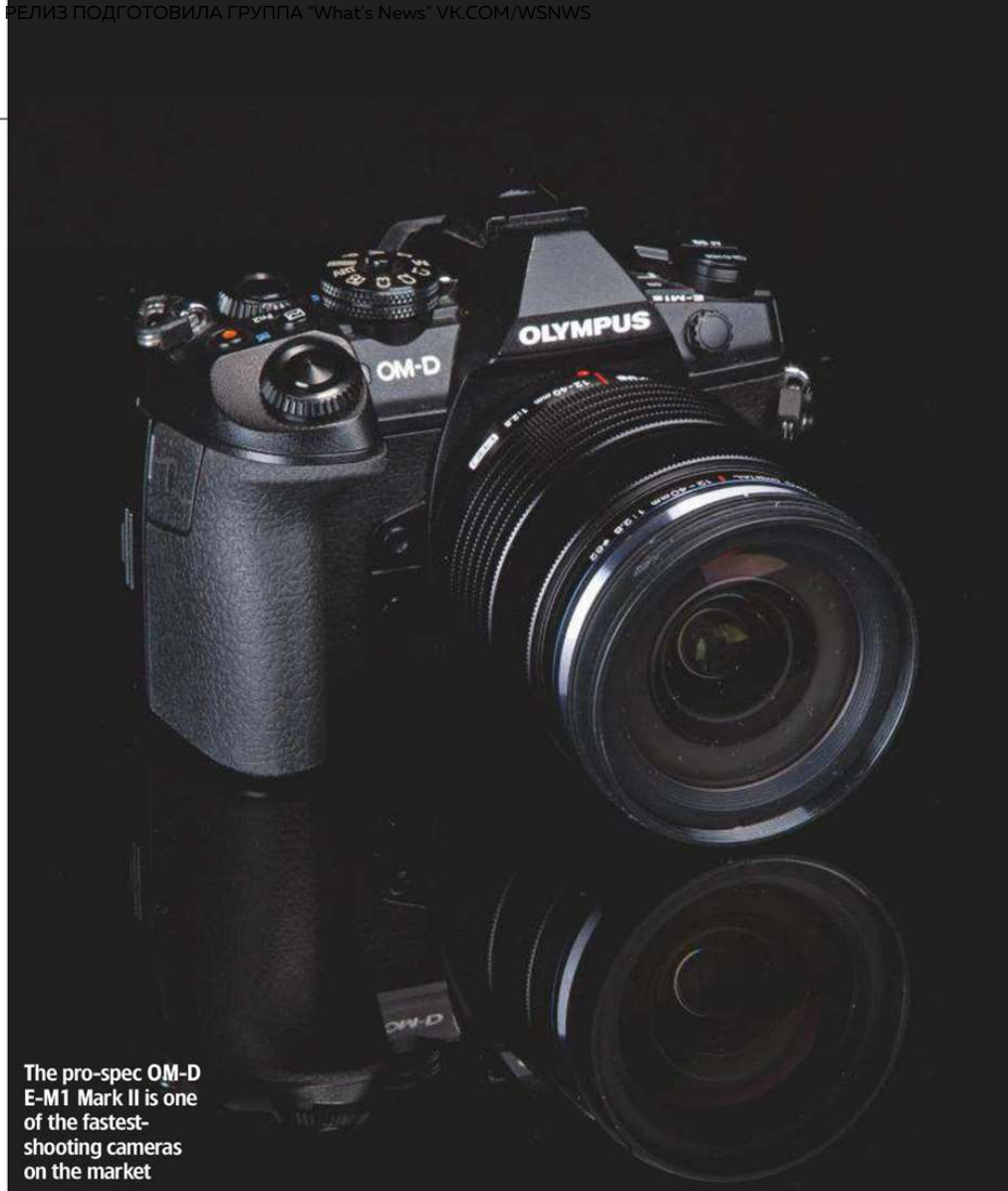
There's a good range of cameras, from entry-level all the way through to the highly capable pro-spec OM-D E-M1 Mark II. In the middle of the range lies the OM-D E-M10 Mark III, which is one of the most attractive options around for

budding photographers buying their first 'proper' camera.

Lovely lenses

Olympus's 26-strong M.Zuiko lens line-up uses a three-pronged approach, with small but generally high-performing consumer zooms alongside compact f/1.8 primes that are relatively affordable and provide high image quality. These are joined by the Pro line of absolutely superb top-spec, weathersealed optics, including a fine set of f/2.8 zooms and some ultra-fast f/1.2 primes. In total, the range covers 7mm to 300mm (14mm to 600mm equivalent). One huge attraction of Micro Four Thirds is that you can carry around a set of high-quality lenses that take up much less space and weigh a lot less than their APS-C or full-frame counterparts.

Olympus has a good range of small but sharp f/1.8 primes



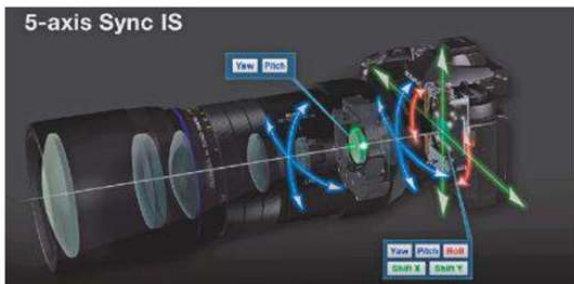
The pro-spec OM-D E-M1 Mark II is one of the fastest-shooting cameras on the market

Key technology

In-body stabilisation

OLYMPUS is one of the longest-running proponents of in-body stabilisation (IBIS), and was also the first to offer 5-axis stabilisation in the OM-D E-M5. Backed by this long experience, its IBIS systems are arguably the most effective around, with the flagship OM-D E-M1 Mark II providing 5.5 stops of stabilisation. This can allow the photographer to use slower shutter speeds and lower ISOs, offsetting the disadvantages of the smaller sensor.

More recently Olympus has also developed a Sync IS system that combines IBIS with optical stabilisation in selected lenses. Using the 12-100mm f/4 IS Pro zoom with the E-M1 II, photographers can get sharp images handheld at shutter speeds of several seconds.



Olympus's 5-axis Sync IS is extraordinarily effective



Panasonic

Lumix cameras make clever use of 4K recording for stills as well as video

PANASONIC was of course the pioneer of mirrorless, with its Lumix DMC-G1 being the very first camera of this type back in 2008. Since then the firm has experimented with making cameras in a wider variety of shapes and sizes than anyone else, while also constantly introducing innovative features, particularly in the field of video recording. Like Olympus, it offers a full range of cameras and lenses from entry-level to pro-spec all based around the same sensor size.

Indeed in its current line-up Panasonic offers a huge choice of cameras, starting with the tiny but surprisingly capable GX800 that costs a mere £299 with 12-32mm lens. The range then splits into dual body types, with the rangefinder-style GX line running alongside the SLR-shaped G series. For example the GX80 is a fine little camera with a corner-mounted viewfinder for £399, while the G80 is a high-spec weatherproof model that costs £750 including a usefully wide-ranging 12-60mm zoom. At the very top of the range we find three flagships, in the shape of the superb stills-focused G9; the stills-video hybrid GH5; and its even more video-centric derivative, the G5S.

Fully featured

In general, Panasonic cameras offer great value for money, and provide a comprehensive feature set with almost every imaginable extra built-in. With 4K video recording included all through the range, they cater as much to budding filmmakers as they do to enthusiast photographers. All include the same clean on-screen interface with well-integrated touchscreen controls; the main criticism is that the physical controls often aren't so well set up, especially when you're shooting with the viewfinder.

Panasonic also has a decent lens range numbering around 30 optics, including a set of premium optics that sport a Leica badge as a result of the two companies' long-term collaboration. But it also offers a nice array of small, relatively affordable

With the Lumix G9, Panasonic has made a flagship camera that's focused in stills photography



Even the £399 Lumix GX80 is packed full of interesting and useful features

primes and a couple of tiny retractable kit zooms that perfectly match its GX-series bodies. In total its lenses cover a range of 7mm to 400mm (or 14-800mm equivalent). Many include optical image stabilisation, which works in concert with the in-body stabilisation found in most of its current cameras to give enhanced effectiveness. A good number are weathersealed, too.

Key technology

4K Photo

PANASONIC has led the way with advancing video technology in mirrorless cameras. Its GH4 was the first consumer camera to include 4K recording, and since then Panasonic has worked hard to make the technology useful to stills photographers.

All its cameras now include a 4K Photo mode, which essentially allows the recording of 8MP stills at 25 frames per second for an extended period of time without taking up too much space on your memory card. The results are stored as a video file, but Panasonic provides an easy interface for extracting individual frames as JPEGs. Using the pre-burst mode it's even possible to get the camera to record a second's worth of frames before you fully press the shutter, meaning you can record events that happen so fast you wouldn't normally be able to react in time.

Panasonic gives easy access to its 4K Photo mode on even its entry-level cameras



Leica

From the stylish TL to the lovely CL, Leica makes a range of interesting designs

LEICA may have made its name by sticking doggedly to the rangefinder design when the rest of the world was shifting decisively towards SLRs in the film era, but in the digital age it's been far more adventurous than many photographers perhaps realise. It was the first to make a fixed-lens compact camera with a conventional APS-C sensor, in the shape of the X1 from 2009, and is still the only one to make a large-sensor waterproof camera with the X-U. It's even made a medium-format SLR system, complete with home-grown electronic adapters to use lenses from other companies.

So it's perhaps not that surprising that the company has also dabbled in mirrorless. In fact it's ventured boldly into this brave new world and come up with some really interesting designs. Its T-series models, including the current TL2, are incredibly tactile cameras that feature a unibody design machined from a single block of aluminium, and with a huge touchscreen covering practically the entire back. Their Android-like touch interface is without doubt the best on any camera to date.

The firm's most charismatic mirrorless model, however, is without doubt the fabulous Leica CL. With a corner-mounted electronic viewfinder and elegant pared-back design, it evokes the spirit of the firm's legendary rangefinders, and makes for a particularly fine combination with compact primes. Like the TL2, this camera uses an APS-C sensor; I'd love to see a full-frame version with a matched set of small lenses.

High-end full-frame

Leica is also the only company aside from Sony to offer a mirrorless camera with a full-frame sensor. The SL is a big, chunky, SLR-style camera that's well and truly aimed at professional photographers. Its highlight feature is a truly astonishing electronic viewfinder that's unmatched anywhere else, with 4.4-million-dots resolution and 0.8x magnification. It gives a glimpse of the quality we can expect to see appear in



The Leica CL provides a modern twist on its classic rangefinder heritage



Leica's high-end SL is a full-frame SLR-style model aimed at pros

Key technology

Leica L-mount

AT FIRST sight you might think there's nothing special about a lens mount, and they all look and behave much the same. But Leica's mirrorless L-mount is noticeably different from most others, in that it's rather larger in diameter. This means that a full-frame sensor fits behind it with plenty of room to spare, in contrast to the Sony E-mount where it appears to have been squeezed in as an afterthought. The advantage of this is that it gives just that bit more freedom for lens designers, particularly when it comes to complex or ultra-fast designs.



The Leica L mount has an unusually large internal diameter

more affordable cameras in due course. Leica's lens line-up reflects distinctly different philosophies for its APS-C and full-frame systems. Its APS-C lenses are mostly designed to prioritise compact size over large maximum apertures, with three zooms that cover a range of 11mm to 135mm (or 17-200mm equivalent), and four primes the pick of which is a compact 23mm f/2. On the other hand its full-frame lenses are all about optical quality, which means they are much larger and heavier. All of its lenses are, of course, hugely expensive.

Sony

The firm's stacked sensor technology has given it a significant lead

SONY was an early entrant to the mirrorless field, having begun by making the remarkably small APS-C NEX-5. But it wasn't until the launch of the full-frame Alpha 7 range that Sony really captured photographers' imaginations. Now it is the undisputed leader, and its advanced sensors have established a huge technological lead that Canon and Nikon will probably struggle to claw back when they finally release their own competitors.

The generation game

What Sony really isn't so good at is naming its cameras sensibly. This is due to its unusual habit of not discontinuing older models when it releases updated versions; instead they stay in the line-up as lower-priced alternatives. So if you want to buy a full-frame Alpha 7 model, for example, you need to be absolutely sure about which of the eight currently available models spanning three different generations you're getting. This isn't a problem for those who follow the market closely, but is unnecessarily confusing for newcomers trying to work out the differences between cameras with very similar-sounding names.

This policy also leaves entry-level models such as the four-year-old Alpha 6000 looking rather dated. However its successors, the A6300 with 4K video and vastly improved autofocus, and A6500 with in-body stabilisation, suffer from a different fate. They use an identical body design and control layout to the A6000, but as these were never designed to accommodate their advanced feature sets, the A6300 and A6500 can be awkward to use.

Thankfully in the full-frame Alpha 7 series, Sony has backed up its considerable technological advances with progressive improvements in body design and user interface. Its latest third-generation models are phenomenal cameras that can compete squarely with the best DSLRs, but these advances come at a price; indeed at £1,999 the A7 III isn't far off being double the price of its predecessor. It still doesn't feel quite as refined as similarly priced DSLRs



The superb Alpha 7 III outperforms DSLRs in the same sub-£2,000 price bracket

from Canon and Nikon, either.

Sony has been very active in building its lens line-up, and now has the largest number of all, with 17 APS-C format E-mount lenses and 25 full-frame FE lenses. Its APS-C range covers 10mm to 210mm (15–315mm equivalent) and concentrates mostly on consumer zooms; the saving grace is a couple of rather nice f/1.8 optically stabilised primes. Meanwhile the FE range covers 12mm to 400mm, including a set of optically stunning, but huge and expensive, f/2.8 zooms and f/1.4 primes. There's also a full set of fine f/4 zooms and some excellent less-fast primes including a fine 85mm f/1.8.

Sony sells three A6000-series cameras with almost the same body design



Key technology

Stacked CMOS sensor

This stacked CMOS sensor comes from the ground-breaking Alpha 9



KEY TO Sony's success has been its advanced sensor and processor technology. Its latest cameras use stacked CMOS sensors that sandwich a RAM chip directly onto the light-capturing layer, which uses back-illumination technology to maximise light capture and minimise noise. The result is faster readout speeds, facilitating rapid autofocus, high-speed continuous shooting and top-quality 4K video output. However these complex, difficult-to-fabricate sensors are precisely what make the cameras so expensive.



What's next?

With the Photokina expo just around the corner and talk of Canon and Nikon gearing up to release new models, it asks the question; what might we see next?

Will they or won't they release a full-frame mirrorless camera? This is the million-dollar question that's been the hot topic of conversation

between so many Canon and Nikon users for quite some time. If recent news and speculation on the internet is to be believed, 2018 looks like it'll be the year we see two of the most respected brands in photography release their first full-frame mirrorless cameras for serious photographers. Yes, they might be late to the party, but it feels like it has to be now or never for Canon and Nikon who are facing a constant battle to retain market share in the competitive full-frame market from the dominant force of Sony's Alpha 7-series. With the clock well and truly ticking and the countdown to Photokina – the world's leading trade fair for imaging – drawing

ever closer, are we about to witness something special that'll be remembered in the history of mirrorless cameras for years to come?

Just as this issue closed for press, Nikon officially announced that it is working on a new, full-frame mirrorless system. Initial details are scarce, but Nikon has confirmed that the camera will employ an entirely new lens mount and an adapter will be made so F-mount SLR lenses can be used with it.

This news, and the speculation about what Canon might be up to, got us thinking. What is it exactly that everyone thinks Nikon and Canon should be doing and, perhaps more important, what is it that people want? Everyone seems to have a different view or opinion on the matter, so with that in mind, AP went on a hunt to get some feelers from various people in the photography industry.

Guy Thatcher

Managing director of Hireacamera



How important is it that Canon/Nikon enter the full-frame mirrorless market?

It is vitally important. With all the news about mirrorless cameras, it's easy to lose track of just how many Canon and Nikon DSLR users there are out there. The EOS 5D Mk IV still remains hugely popular and in the D850, Nikon has won back huge favour. Many have invested sizeable amounts in good glass so it makes sense to seize that loyalty and give users what they've been requesting.

Is it a good idea that neither manufacturer has rushed in to this segment?

While mirrorless has now been around for a while, I think it's fair to say that it's really only since the release of the third-generation Sony A7-series that you could truly consider full-frame mirrorless as an acceptable replacement for a full-frame SLR. On-sensor phase detection is now at a point where even the most diehard SLR fan has to admit the downsides are disappearing.

Have loyal Canon/Nikon users had to wait too long?

Yes. That much is clear in the number of customers we have seen switch to mirrorless who are former Canon and Nikon users. The frustrating part of it all is they didn't want to move.

How important is it that Canon/Nikon get their first full-frame mirrorless camera right?

However you aim your offering, you are never going to satisfy everyone. What is clear though, is that they are both going to need a good sensor to impress people – Sony's stacked CMOS sensor really has set the bar in terms of

performance. What is missing from today's current offerings, at least so far as a lot of our Canon/Nikon SLR owners are concerned, is that feeling of durability and reliability. Fujifilm's X-H1 has been the first mirrorless where the company hasn't worried about a increase in size and weight to offer pros what they wanted. It can't be long before Sony offers a bigger, fully weatherproofed, fast mirrorless camera.

What would the demand be like to hire Canon/Nikon full-frame mirrorless cameras if they do arrive?

Within a month of release, the Sony A7 III was our best hiring camera – it might not have the firepower of the A7R III or A9 but Sony has got the balance just right. If Canon can get it right and at least match Sony's offerings, it will have a winner on its hands. But it has to stand up to that competition – people won't accept excuses, having waited so long. Nikon has shown with the D850 that demand from customers is still there – again, if they can produce something to match Sony's cameras they might hold onto their customers.

Have Canon/Nikon got what it takes to fight against Sony's successful A7-series?

I truly hope so but Canon has to not be afraid to offer an EF mount mirrorless camera – we should have seen one arrive long ago in my opinion. Sure, offer the EF-M range but give us what we want – a mirrorless camera in an SLR-type body with an excellent performance but one that also addresses current concerns over durability, heat containment, battery life, image writing times, etc – indeed all the things that diehard and committed SLR users won't put up with. If they can offer that and the offering doesn't get compromised for marketing purposes, I truly believe they can do it. Nikon I am sure will have a larger fight on its hands, having been out of the mirrorless market for a while, but I wouldn't write Nikon off just yet. We'll just have to wait and see what the future holds!



Rob has been using Nikon DSLRs for over ten years and hasn't yet been persuaded to switch to mirrorless

Rob Dickinson

Nikon user and AP reader



Being a long-term Nikon user, what is it that's kept you brand loyal?

I bought into Nikon in 2007 with a D80 and now have a D7100. I felt that the equipment is well made and you get a good spec for the money. Since I have a lot of Nikon lenses it makes a lot of sense to stick with the brand I know.

What do you see Nikon needing to do to stay competitive in the full-frame market?

Innovation is key – Nikon needs to produce equipment that will stand out from the other brands and offer features that might not be seen on other cameras while keeping the price sensible.

If Nikon does release a full-frame mirrorless camera, what do you envisage it looking like?

I would hope for a retro look in black or silver along the lines of the strong and durable FM2.

Do you want your current lenses to fit the camera directly, or would you be happy to use an adapter?

I'd like it to be F mount but would not be totally averse to an F mount adapter for a new mount system.

What are your main concerns about switching to mirrorless?

The mount for the system. Will I have to buy new lenses or an adapter? Size is a main concern too. Many mirrorless cameras feel much too small in the hand.

Does the idea of Nikon going totally mirrorless excite you?

Not really. There is something about the slap of the mirror and looking through an optical finder. I'm open to new ideas, though.

Neil Old

Chief executive of Jessops



People tend to be brand-loyal to SLRs – do you see many people switching?

We do see some people switching. I think the people who are using entry- and mid-level SLRs and

haven't invested a substantial amount of money in lenses are potentially less loyal to the SLR format. Clearly when you start to talk to people with 5Ds or D850s, they've got cameras worth well in excess of £2,000 and they've got the glass to go with it – they're passionate about SLR photography and I think they always will be. I think it will be interesting to see how Nikon and Canon play the mirrorless market over the next 12-18 months.

Looking forward, do you imagine Canon and Nikon will come out with high-end mirrorless cameras?

I don't have any particular insight. But with the forecasted growth in the mirrorless market and with Sony riding high on the back of its mirrorless range, you've got to think that Canon and Nikon will join the fray to protect their position. It's just a question of not if, but when. The mirrorless market was oversupplied in the early days and incorrectly forecasted, but I think the market has settled down now. It is a very, very credible alternative to an SLR camera and the £1,000-plus mirrorless camera is a really interesting part of the market for Jessops. If I were in their position that would be the area of the market I would look at.

Roscoe Atkins

Managing director of Park Cameras



How important is it that Canon/Nikon enter the full-frame mirrorless market?

It is extremely important that Canon and Nikon enter this market. Consumers are becoming more aware of the

advantages of full-frame sensors but are increasingly reluctant to carry around bulky bodies and lenses. While full frame is not best suited to all types of photography and a lot of users don't want to carry around heavy kit (regardless of having a mirror or not), it's very clear that full-frame mirrorless brings extremely high image quality in a form factor smaller than a DSLR allows.

Is it a good idea that neither manufacturer has rushed in to this segment?

It is understandable that Canon and Nikon have wanted to protect their shares of the photography market by focusing on DSLRs, which still accounts for the largest part of the market. But this is not future-proof with the giant leaps that Sony continues to make with its full-frame mirrorless line-up. It is important that when Canon/Nikon enter the market that they get the product proposition right from the outset. And in being later to the party, they will have the advantage in being able to learn from current models although Sony does now have an incredible range of bodies and lenses that will take some time to catch up with.

Have loyal Canon/Nikon users had to wait too long?

Yes. It's been nearly five years since Sony released the A7. And while that model didn't have the range of lenses, or the quality that its latest bodies offer, Sony has since worked very hard to bring out better bodies and a really strong line-up of lenses. Many photographers have made the leap to Sony rather than wait for an indeterminate length of time for Canon/Nikon to bring something out that may or may not fit their needs.

How important is it that Canon/Nikon get their first full-frame mirrorless camera right?

It's paramount. Canon and Nikon have the advantage of knowing the pros and cons of competitors' full-frame mirrorless products but will they use this to their advantage or make the same mistakes? Both Canon and Nikon have launched mirrorless products that don't suit a lot of photographers and they will know this from their relatively low level of sales. While they have their place for some

'Really keen photographers demand the best image quality and this requires suitable native lenses'

users, really keen photographers demand the best image quality and this requires suitable native lenses – not using bulky adapters that miss out on one of the key advantages of being mirrorless.

What do you envisage the demand of Canon/Nikon full-frame mirrorless cameras to be from a retailer's perspective?

If they get their product proposition right then it will be huge. For almost all of our 47-year heritage, Canon and Nikon have been our clear top two brands. In 2018, Sony has entered the top two and with its sensational products it really is challenging the others for the top spot. But there are still a lot of our customers who love the idea of mirrorless (or perhaps don't know enough about it yet) but haven't yet made the jump. It isn't right for everyone, but it is for many – so there will be a lot of loyal Canon/Nikon users that will be extremely excited for their preferred camera brand to bring out something new for them to upgrade to.

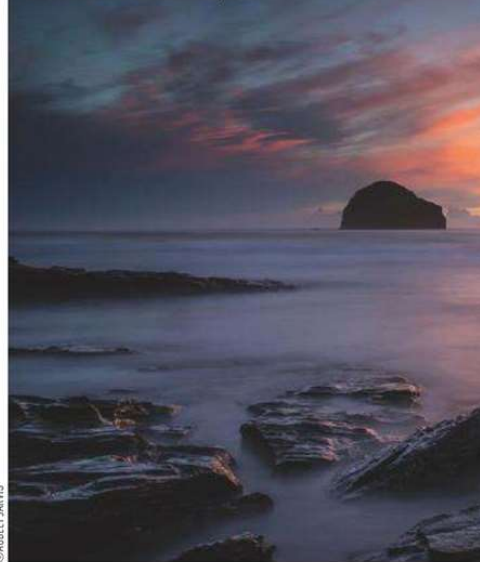
Do you see a world where all cameras are mirrorless and DSLRs become obsolete?

Eventually. There are still a lot of advantages of the DSLR for certain photographers but I'm not convinced that technology leaps in the future will not all-but-completely eliminate these advantages. But this could be another 10 years in the future. Who knows?

Have Canon/Nikon got what it takes to fight against Sony's successful A7-series?

Yes. Canon and Nikon are brands best known for their cameras. Sony has done an exceptional job in producing incredible kit but its whole brand recognition isn't from a long history of photographic products. Sony is clearly important in delivering a very large proportion of image sensors – a real strength for the company – but it won't have it all its own way when the might of Canon and Nikon get behind what they might offer in the future. Having three (or more?) brands in this segment drives innovation and technology advancements that ultimately bring us all what we want... incredible cameras to take inspiring photographs and videos. It should be an exciting time in the lead up to Photokina 2018.

Audley regularly travels with his Nikon kit and has built up a collection worth £8,000



Audley Jarvis

Journalist and Nikon user



Being a long-term Nikon user, what is it that's kept your brand loyal?

Partly the excellent image quality and fantastic choice and quality of Nikon lenses, but also because over

the years I've become accustomed to the layout of Nikon DSLRs and instinctively know where everything is.

Have any full-frame mirrorless cameras taken your interest or fancy?

While it's not a full-frame camera, the Fujifilm X-T2 has long been an object of desire for me. This is partly down to its general design, ergonomics and handling, but also the fantastic image quality it's capable of – I'm a huge fan of Fujifilm's colour and tonality.

What does Nikon have to do better than other brands if it makes a full-frame mirrorless camera?

As a Nikon DSLR user I'd like to see them make one with a very similar control scheme to Nikon DSLRs – that way I could just pick it up and use it without having to re-learn where to find everything. In more general terms, I think Nikon would need to find its own distinctive style.

If Nikon does release a full-frame mirrorless camera, what do you envisage it looking like?

Ideally a cross between the Fujifilm X-T2 and the Nikon Df. I like old-school ISO/shutter



speed dials on the top plate and an aperture ring at the base of the lens.

Do you want your current lenses to fit the camera directly, or would you be happy to use an adapter?

I'd like a new full-frame Nikon mirrorless camera to offer tangible size and weight benefits over its FX-format DSLRs; however perhaps the best way forward would be for Nikon to release a bespoke new range of full-frame mirrorless lenses alongside an adapter option for those of us who already own a collection of FX-format lenses.

What do you see as the main benefits of switching to mirrorless?

I like the idea of higher continuous shooting speeds, more advanced AF systems, better video capabilities, greater user control and more immediate feedback as to how your images are going to turn out at the point of capture.

What are your concerns about switching to mirrorless?

Primarily the cost of making the switch! I've spent around £8,000 building up my collection of Nikon DSLR equipment. If I was going to make a fully committed switch then I guess I'd have to sell all of this, which is quite an undertaking.

'Over the years I've become accustomed to the layout of Nikon DSLRs'

Richard Knight

AP reader and Canon user



Being a long-term Canon user, what is it that's kept you brand loyal?

I have used Canon DSLRs for over 15 years and have remained a Canon user for two main reasons; reliability (I think in 15 years I have had one Canon lens that has needed repair), and the fact that I am heavily invested in Canon lenses. I am comfortable with the ergonomics of Canon DSLRs.

What does Canon need to do to stay competitive in the full-frame market?

It's well documented that Canon sensor technology lags behind that of Sony. But what does that mean in the real world? I shoot mainly wildlife using an original 1DX and a 5D Mark IV. If I can nail focus and nail exposure, I am happy, and I'm happy with both these cameras. Usability is where Canon excels.

Have any full-frame mirrorless cameras taken your interest or fancy?

I'm tempted by the offerings from Sony. Maybe not for my main photography which is wildlife, but certainly when travelling. A smaller camera that excels in low light conditions is definitely something I would consider.

What does Canon have to do better than other brands if it makes a full-frame mirrorless camera?

Canon has to make a camera that is usable. When I say usable I mean as intuitive for a Canon user as, say, the EOS 5D Mark IV is. A camera that, if you have ever picked up a

Canon camera before, you can start taking images with straight away, without reaching for the manual or delving into the menu. It also has to have a reliable autofocus system in low light and when tracking a moving subject; plus, whichever lens mount it adopts, it has to have a full range of lenses to choose from.

Do you want your current lenses to fit the camera directly, or would you be happy to use an adapter?

I have mixed views on this. Could a new lens mount provide more compact lenses? If a reduction in size is possible there could be a benefit to a new lens mount but I think there is also an argument for being able to use EF lenses for those of us who have already invested in them.

What do you see as the main benefits of switching to mirrorless?

From what I have seen the biggest benefits are size and the possibility of significant increases in frame rates. I mainly shoot wildlife so I like the benefit of increased frame rates without EVF blackout. I really like seeking out action in my wildlife photography so the extra fps could be useful in some scenarios, but being able to continue to see what is being seen through the lens during a burst would be fantastic.

What are your main concerns about switching to mirrorless?

A smaller body may well put me off. When using a long lens, a heavier body can actually help balance the weight and make longer lenses easier to handle. Shooting a lot in Africa, my enemy is dust. I do worry that this could be more of an issue with mirrorless.



Diehard Canon user Richard Knight admits that a smaller camera would be beneficial for travelling

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Will old Canon lenses work on my EOS 450D?

Q My friend's Dad is having a clear out and has offered me his old Canon EOS 1000 film camera and two lenses, for free. I use a Canon EOS 450D and was wondering if the lenses would work on my camera. The first lens is a 28-80mm f/3.5-5.6 USM and the second is a 75-300mm f/4-5.6, also USM. My friend says the lenses are over 20 years old, which is cool because I'm turning 20 next year. The idea of using such old lenses is rather intriguing so I hope they will work.

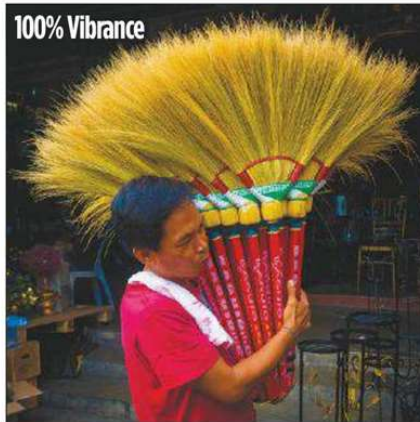
Toby Arnold

A The good news is that these are Canon EF-type lenses and they will work normally on your EOS 450D. Canon has maintained good compatibility with lenses for its EOS system since it was launched in 1987. The not so good news is that these lenses are not nearly as sharp as contemporary ones and tend to get softer at the longer end of the focal length zoom range. The 28-80mm has a plastic lens mount and no focusing ring to speak of. Their Ultrasonic Motor (USM) focusing makes them quiet and fairly quick to snap into focus and the mechanism is quiet. I'd recommend you try the lenses on your 450D and see how you get on. The 75-300mm is a long telephoto and that could have plenty of uses. The 28-80mm is a standard kit zoom for the EOS 1000 SLR but on your crop-sensor EOS 450D its zoom range is less useful as the field of view is no longer wide.



The Canon 28-80mm is a standard kit zoom

100% Vibrance



100% Saturation



What is the difference between vibrance and saturation?

Q I have fiddled around with vibrance and saturation adjustments when editing my photos but I'm not really sure what the difference is, precisely, between the two. Could you shed any light?

Hector Penfold

A Both saturation and vibrance adjustments affect the intensity of colour in an image. If you desaturate an image the colour drains away. Oversaturate an image and the colour becomes lurid. Vibrance is a more subtle control of colour intensity. When using vibrance to alter colour intensity in an image the changes are stronger in

Original



Vibrance is more subtle than saturation

areas of the image that are less saturated to start with. Vibrance also helps avoid making skin hues unnaturally saturated.

What does AF-A mode do on my Pentax K-50?

Q I recently bought a second-hand Pentax K-50 DSLR with a DAL 18-55mm WR and DAL 50-200mm WR lens as a kit. This is my first DSLR, having previously used a Nikon P500 bridge camera. I'd like to start taking shots of flying birds, so I am trying to work out which is the best focusing mode to use. It seems to me that I should use a mode that focuses constantly because the subject distance will be changing constantly. I understand AF-S, being single action focus. AF-C appears to stand for continuous autofocus, but I don't know how the AF-A option fits into the equation. Which would be best for me?

Ben Stamford

A The objective of AF-A (Automatic AF) is for the camera to work out whether continuous or single action auto focusing is more desirable. In theory, if the subject is moving around the frame the system will decide to focus continuously. If the subject is stationary the camera ought to choose a single focus action. AF-A is really a 'beginner' mode and I would recommend that you practise using the different modes available, including AF-S (single action) and AF-C (continuous). This is because, ultimately, you ought to be more able to decide which mode is better.

Q&A compiled by Ian Burley

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BLAST FROM THE PAST

Gami 16

John Wade reviews a beautiful and highly collectable Italian subminiature



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The camera gets its name from Galileo di Milano, its Italian manufacturer. Measuring 115x52x25mm and weighing 250g, it's larger and heavier than most 16mm film cameras and shoots 12x17mm exposures on cassette-loaded film. Twin dials on the top set focus from 50cm to infinity and with shutter speeds of 1/2–1/1,000sec. Another dial on the underside sets apertures from f/11 to f/1.9.

When not in use, a protective cover conceals the lens, which incorporates a slide-in yellow filter. Open the cover and the shutter

can be fired three times in succession with a clockwork motor drive automatically winding the film between exposures. Closing the cover tensions a spring that drives the motor for the next three exposures. As if all this was not enough, the viewfinder contains a dioptre adjustment for different eyesights, a coincident image rangefinder and an extinction meter to guide you towards the right exposure.

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What's more, if you are willing to load the camera's twin cassettes with internet-bought 16mm film (in the dark, of course), you can still have a lot of fun using it.

What's good Large range of accessories; built-in motor drive, meter and rangefinder.

What's bad Shutter prone to jamming if fired without a film loaded.



Actual size: a strip of Gami colour negatives discovered with the camera

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CANON 300mm f4 USM "L" IMAGE STABILIZER	MINT CASED £925.00
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CANON 70 - 200mm f4 USM "L" IMAGE STABILIZER	MINT BOXED £735.00
CANON 70 - 200mm f2.8 USM "L"	MINT BOXED £699.00
CANON 70 - 200mm f2.8 USM "L" IMAGE STABILIZER	MINT BOXED £975.00
CANON 80 - 200mm f2.8 "L" USM WITH HOOD	MINT-BOXED £499.00
CANON 20mm f2.8 USM	EXC++CATED £245.00
CANON 24mm f2.8 EF	MINT £175.00
CANON 28mm f2.8 EF	MINT £169.00
CANON 35mm f2.8 EF	MINT £169.00
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CANON 100mm f2 USM	MINT £275.00
CANON 100mm f2.8 MACRO	EXC++CATED £195.00
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CANON 70 - 300mm f4.5/5.6 IS USM DO REFRACTIVE	MINT - £345.00
CANON 70 - 300mm f4.5/5.6 USM IMAGE STABILIZER	MINT £295.00
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Ringflash Adapter to fit 580EX RayFlash	E++ £29
Ringflash Adapter to fit 580EX MkII RayFlash	E++ £39
S1RC Ringflash Adapter (580EX) RayFlash	E++ £59
SB-E1 Speedlite Bracket	E+ / Unused £79 - £139
SC-01 TTL Off Camera Shoe Cord Nissin	E++ £15
Speedlight Powerblock 900	E++ £79
Transistor Pack E	E+ / Mint £20 - £69
Whaletail (580EX) Gary Fong	E++ £25
Releases RS-80N3 Release	E++ £20 - £25

RS60-E3 Release	E+ / Mint- £9 - £12
RS80-N3 Release	E+ / E++ £15 - £29
TC-80N3 Timer Release	Exc / E+ £39 - £79
WFT-E1 Wireless File Transmitter	E++ / Unused £149 - £199
WFT-E4 Wireless File Transmitter	Mint- £249
Extension Cord 1000 T3	Mint- £15
LC-5 Wireless Remote Controller Set	E+ / Mint- £149 - £219
LC3 Wireless Set	E+ / Mint- £49 - £99
Finder Pro Finder DSLR Viewfinder	E++ £45
R Digital Viewfinder	E++ £95
SC-V100 Digital Viewfinder	15 Days £45

Canon FD Accessories

250 Film Magazine	E++ £20
52mm Close Up 450	E++ £15
72mm Skylight 1A	E++ £19
Angle Finder Adapter S	E++ £27
Double Cable Release	Unused £29
Macro Photo Coupler FL55	15 Days / Unused £10
Macro Photo Coupler FL58	E++ £15
Macrophoto Hood	Unused £15
Extension Tube FD50U	E++ £9 - £15
Extension Tube Set M	E++ £15
FL15 Extension Tube	E+ / Unused £5 - £15
FL25 Extension Tube	E+ / Mint £5
Manual Ext Tube Set	E++ £9 - £15
Autobellows	E++ £89
FL Bellows	E++ £49
Interface Unit D.M.B.	15 Days £29
LC-2 Wireless Controller	E++ / Unused £29 - £39
Life Size Adapter (50/3.5)	E++ £15
MA Drive Set	E++ £39
Magnifier Adapter S	E++ £27
Marine Capsule A	E+ / Unused £250 - £349
Photomic Unit F	E++ / Unused £19 - £29
Slide Duplicator	E++ £29
TTL Hot Shoe Adapter	E++ £9
Connecting Cord 300	E++ £9
Off Camera Shoe Adapter	E++ £9
199A Wide Diffuser	E++ £5
2777 Wide Diffuser	E++ £5
Battery Magazine MA	Unused £10
Battery Magazine TP	Unused £15
Connecting Cord 300	E++ / Unused £15 - £19
Connecting Cord 60	E++ £9
Flash Coupler D	E++ £15
Flash Coupler F	E+ / E++ £12 - £15
Flash Coupler L for F1	E++ £20
Sensor Adapter AB-34	Unused £9 - £15
Transistor Pack G	E++ £49

Releases R60T3 Release	E++ £9 - £12
60T3 Release + 1000T3 Ext Cord	E++ £15
BR-E1 Wireless Remote	Mint- £25
Double Cable Release	E++ £25
ET1000 T3 Extension Cord	E++ £19
Hoods BS55 Lens Hood	E++ £5
BS-55 Lens Hood	E++ £7
BT-52B Lens Hood	E++ / Unused £6 - £9
BT-55 Lens Hood	E++ £7
BT52 Lens Hood	E++ £7
BT52B Lens Hood	Unused £9
BT55 Lens Hood	E++ £5
BT58 Lens Hood	E++ £7
ET-83C Lens Hood	E++ £15
ET62 II Lens Hood	E++ £8
ET64 II Lens Hood	E++ £15
ET65 II Lens Hood	E++ £5 - £8
ET67 Lens Hood	E++ £15
S-60 Metal Hood	E++ £9
T-50-2 Metal Hood	E++ £9
T-60-2 Metal Hood	E++ £9
T-65 Metal Hood	E++ £9
W-69 Rubber Hood	Unused £9
W60 Metal Hood	Unused £9
W62 Metal Hood	E++ £9
Finders Angle Finder	E+ / E++ £15
Angle Finder A2	15 Days £15
Angle Finder B	E+ / E++ £15 - £35
Eye Level Finder FN	Mint- £69
Magnifier S	E+ / E++ £25
Right Angle Finder	E++ £14
Right Angle Finder	E++ £15
Speed Finder F	15 Days / E+ £39 - £45
Waist Level Finder F	E++ / Mint- £59
Waist Level Finder F1	E++ £49
Waist Level Finder FN	E++ £75

43mm Skylight	Unused £7
48mm Close Up Lens 240	E++ £9
48mm Drop-In Linear Polariser	E++ £75
52mm Protection	Mint- £9
52mm Skylight	E++ £9
58mm Amber A8 Colour Correction	E++ £15
58mm CCA4 Colour Correction	Unused £9
58mm Circular Polariser	E++ / Unused £25
58mm Colour Correction A12	E++ £19
58mm Haze 1	Mint- £15
58mm ND4x	Unused £15
58mm Protection	E++ / Unused £15 - £20
58mm Skylight 1A	Mint- £25
58mm UV	E++ £15
72mm Circular Polariser	Unused £49
72mm Conversion 8	E++ £9
72mm Holder for Gelatin Filter	Unused £15
72mm UV	E++ £15
77mm Protection Filter	E++ £15
Series IX Yellow Y3	E++ £15

Collectables & Misc

Topcon 1/2/3 Extension Tube	E++ £25
Extension Tube Set	E+ / E++ £12 - £15
Eyepiece Magnifier	E++ £25
No 1 Focusing Screen	E++ £15
No 5A Focusing Screen	E++ £15
Contarex Professional Body Only	E++ £719
Special Body Only	E++ £379
Super Chrome Body Only	Unknown £195
Super Electronic (Type 1) + 50mm F2	E++ £749
Super Electronic Body Only (Type 1)	E++ £699
2x Film Magazine + Leather Case	E++ £39
Electronic Tele Sensor	E++ £39
Electronic Time Indicator	E++ / Mint- £25 - £29
Ever Ready Case (20.7526)	E++ £29
Film Magazine + Leather Case	E++ £35
Interval Timer	E++ £39
Motordrive Handgrip	Mint- £49
Mamiya 21mm F4 Auto ES	E++ £99
21mm F4 Sekor SX	15 Days £199
28mm F3.5 Sekor E	15 Days £49
35mm F2.5 Type R1	E++ £49
Zeiss 50mm F1.5 Sonnar	E++ £195
85mm F2 Sonnar	E++ £299
Yashicamat Auxiliary Telephoto Lens Set	Exc / E+ £25 - £35
Auxiliary Wide + Telephoto Lens Sets	E++ £195
Auxiliary Wide Angle Lens Set	15 Days / Exc £20 - £29

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Contax Accessories

Dioptrics -3 6x4.5	Mint- £15
Circular Dioptrite +3 - SLR	E++ £15
Circular Dioptrite -3 - SLR	E++ £15
Circular Dioptrite -4 - SLR	E++ £15
Circular Dioptrite -5 - SLR	E++ £15
FL Dioptrite -3	E++ £15
FL Dioptrite -5	Mint- £15
H10 Digital Back 6x4.5	Unknown £399
MFB-2 Polaroid Mag 6x4.5	Exc / E+ £25 - £99
Cases C1 Flex Case (RTS3) - SLR	E++ £15
CA11 Ever Ready Case - SLR	Unused £9
CA21 Ever Ready Case - SLR	Unused £9
FS5 Focusing Screen - SLR	E++ £9
Cables Switch L30	E++ £9
Cable Switch LA50	E++ £29
LA30 Release Cord	E++ £15 - £25
Cable Switch L1000	Mint / Unused £15
Cable Switch L30	E+ / E++ £9 - £15
Cable Switch L500	E++ £15
TLA300SS Extension Cord	E++ / Mint- £15
16mm Viewfinder - G Series	E++ £139
21mm Viewfinder - G Series	Mint- £169
GC-110 Body Case (G1) - G Series	E++ £35
GC-21 Case (G2) - G Series	E++ £89
TLA Attachment Adapter	E++ / Mint- £29
TLA Ext Conn S	E++ £15
TLA Ext Cord 100	E++ £15
TLA Extension Connector S	E++ / Mint- £12 - £15
TLA Extension Cord 100	E++ £15
TLA Extension Cord 100S	E++ / Mint- £12 - £15
TLA Extension Cord 100ss	E++ / Mint- £15
TLA Extension Cord 300	E++ £15

TLA Multi Connector S	E+ / Mint- £9 - £15
Hood GG1 Hood - G Series	E+ / Mint- £12 - £15
GG2 Hood - Black - G Series	E++ £25
GG3 + GG2 + GG1 Hood - G Series	E++ £29
GG3 Hood - G Series	E+ / E++ £10 - £20
GG3 Hood + GK54 Hood Cap - G Series	E++ £29
GK54 Hood Cap - G Series	Mint- £20
G11 Rubber Lens Hood	E+ / E++ £10 - £15
G12 Rubber Lens Hood	E++ £10
G14 Rubber Lens Hood	E+ / Unused £20 - £25
GB51 Lens Hood	Mint- £15
GB75 Lens Hood	E++ £45
GB77 Hood (100mm F2.8 AF)	Mint- £39
Filters 49/55 Ring	Unused £9
49mm Skylight 1A	Unused £15
52mm Ring	Unused £10
55/86 Ring	E++ £15
55mm A10 (85)	E++ £9
55mm A2 (81B) filter	E++ / Unused £9 - £15
55mm B10 Blue (80B)	E++ / Unused £10 - £15
55mm Linear Polariser	E+ / E++ £15 - £25
55mm Neutral Density ND2	E++ £12
55mm Protection Filter	Mint- £15
55mm Skylight 1A	E++ £12
55mm Softar I	Unused £25
55mm Softar II	Unused £25
55mm Softar III	Unused £25
55mm Warm A2 (81B)	Mint- £15
67mm Blue 82A	Unused £15
67mm Blue B10 (80B)	E++ £12
67mm Blue B2 (82A)	E++ £12
67mm L39 UV	E++ £15 - £20
67mm Skylight 1A	E++ £15
67mm Softar I	Unused £30
67mm Warm A2 (81B)	E++ £12
72mm Circular Polariser	Unused £69 - £79
72mm L39 UV	Unused £30
72mm L39 UV filter	E+ / E++ £15 - £45
72mm Skylight 1A	Unused £30
72mm Skylight 1A MC	E++ / Unused £20 - £59
82/86 Ring	E++ £20
82mm A2 (81B) Filter	Mint- £35
82mm L39 UV filter	E++ £35
82mm Skylight 1A	E++ £29
82mm Warm (81A)	Mint- £49
86mm 1A MC Filter	E++ £39
86mm Skylight 1A	Unused £49
C2 Flex Case (ST)	E++ £15
Databack D10 (N1)	15 Days / E++ £99 - £129
Focus Screen FS-1 (RTS2)	E++ / Mint- £19
FS-2 Focus Screen (RTS2)	E+ / Mint- £15 - £19
FS-3 Focus Screen (RTS2)	Mint- £19
FS-4 Focus Screen (RTS2)	Mint- £19
FS-41 Focus Screen (RTS2)	Mint- £19
FS-5 Focus Screen (RTS2)	Mint- £19
FS-6 Focus Screen (RTS2)	Mint- £19
FS-7 Focus Screen (RTS2)	Mint- £19
FU-5 Focus Screen (S2/S2B/167MT)	Mint- £20
FU6 Focus Screen	E++ £15
FV-1 Focus Screen (RTS3)	Mint- £25
FV-3 Focus Screen (RTS3)	Mint- £25
FV-5 Focus Screen (RTS3)	Mint- £25
FX Focus Screen	Mint- £20
RTS Focus Screen - Cross Scale	E++ / Mint- £15
RTS Focus Screen - Matte	Mint- £15
RTS Focus Screen - Microprism	Mint- £15
RTS/RTS2 Axial Pivot Support	E++ £15
Power Pack P6	Unused £39
P8 Power Pack	E++ £29

Hasselblad Accessories

Hoods 50mm F2.8 F/FE Lens Hood	E++ £35
50mm ZV Hood (Silver) Zeiss	Mint- £59
Bay 60 Adapter for Proshade 6093	E++ £35
Bay 60 Hood 80mm	E++ £39
Pro Shade Bay 50	Exc / E+ £15 - £45
Proshade 6093T	15 Days £45
Proshade 93 Adapter	Mint- £49
ProShade Bay 50	E+ £15 - £25
Series 63 Hood 50mm	E++ £20
Series 93 Hood 50mm	E++ £35
Extension Arm (A4098)	E++ £20
Extension Tube 16E	E+ / E++ £65 - £75
Extension Tube 21	Exc / E+ £25
Extension Tube 55	E++ £25
Extension Tube 56E	E++ £79
Extension Tube 8	Exc / E++ £20 - £29
AutoBellows + Hood	E++ £299

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PM45 Prism.....	E+ £239
PM5 Prism.....	E+ / E++ £169 - £199
PME45 Meter Prism.....	E++ £399
PME90 Meter Prism.....	15 Days / E++ £299 - £399
Sports Viewfinder.....	E+ / E++ £10 - £15
Frame Viewfinder (40215).....	E++ £15
Narrow Leather Strap.....	E+ / E++ £20
Pistol Grip.....	E+ £15
Proflash 4504.....	E+ £99
Adjustable Flash Holder (45039).....	E++ £15
Winding Knob 500CM.....	E++ £15
Quick Focus Handle 2.....	E++ £12
Quick Tripod Coupling.....	Exc / E+ £19 - £29
Quick Winding Crank 12on/16on/70 Magazines.....	E++ £10
Rapid Wind Crank (2000).....	E+ £29
CW Winder + Remote.....	E+ / Mint- £159 - £249
Winder F.....	E++ £75
Filters Adapter 60/63 (51638).....	Mint £20
Filter Adapter Serie 63 (40053).....	Mint £10
67mm Circular Polarisor.....	E++ £59
77mm Sky/UV Filter.....	E++ £35
Bay 50 CB1.5.....	E+ £9
Bay 50 CB3.....	E+ £9
Bay 50 CB6.....	E+ £9
Bay 50 CR1.5 Filter.....	E+ £15
Bay 50 CR3.....	E+ £9
Bay 50 Diffuser DF2.....	E++ £15
Bay 50 Proxar 0.5m.....	E+ / E++ £12
Bay 50 Proxar 1m.....	E+ / E++ £15
Bay 50 Proxar 2m.....	E++ £12 - £15
Bay 50 Softar 2.....	E++ £15
Bay 50 UV/Haze.....	E++ £12 - £15
Bay 60 Proxar 1m.....	E++ £25
Bay 60 Softar 1.....	E++ £20
Bay 60 Softar 2.....	E+ £15
Bay 60 Softar II.....	E+ / E++ £15 - £20
Bay 70 UV.....	E++ £39
Gelatin Filter Holder 50/70 (40690).....	Mint £15
Gelatin Filter Mount (5) 6093/75 (51705).....	Mint £25
Gelatin Filter Mount 6093/75 (51705).....	Mint £25
Series 93 Soft.....	E++ £35
Soft Filter Kit.....	E++ £25

Leica M Accessories

Filters A36 Graduated Green.....	E++ £15
A36 Yellow.....	E+ / E++ £10 - £15
A42 Swing Polariser.....	15 Days / E++ £20 - £65
A42 Uva.....	E+ £20
A42 Yellow.....	E+ £20
Close Up No3 (3.5cm and 5cm Elmar).....	E+ £20
E32 Uva Filter (500/8).....	E++ £10
E39 UV/IR - Black.....	E++ / Mint- £35 - £39
E42 Green - Chrome.....	E+ £15
E43 UV/IR-Chrome.....	E++ £35
E46 UV/IR.....	E++ / Mint- £35 - £39
E46 UVA - Black.....	E++ £35
E46 UVA - Chrome.....	Mint- £45
E46 Uva II - Chrome.....	Mint £45
E49 UV/IR - Black.....	E++ / Mint- £39 - £49
E49 Uva - Black.....	E++ £35
E49 Uva - Chrome.....	E++ £29
E55 - Series 7 Adapter.....	E++ £15
E55 Circular Polariser.....	E+ / Mint- £35 - £45
E55 UV/IR - Black.....	E++ / Mint- £25 - £49
E55 Uva - Black.....	E+ / E++ £20 - £35
E58 Orange.....	E++ £29
E60 Circular Polariser.....	E++ £39
E60 Uva II - Black.....	Mint- / Mint £79 - £89
E60 Uva II - Chrome.....	Mint- £89
E67 - Series 8 Adapter.....	E++ £15
E67 Uva.....	E+ £20
E67 Yellow/Green.....	Exc / Mint- £15 - £39
E77 Uva - Black.....	E++ £49
ELCOM Close Up Lens.....	E+ £25
ELPET Close Up Lens.....	E+ £25
ELPIK Close Up Lens.....	E+ £25
Elpro 1 Close Up Lens.....	E++ £29

Elpro 3 Close Up.....	E+ / E++ £19 - £39
Elpro Via Close Up Lens.....	E+ / E++ £9 - £12
Elpro Villa Close Up Lens.....	E+ / E++ £9 - £12
Elpro Vlb Close Up Lens.....	E+ £9
FIXIO Green.....	E++ £20
Macrostar Vlb Close Up Lens.....	E+ £12
Series 6 Neutral Density 4x.....	E++ £15
Series 6 Orange.....	E++ £9
Series 6 Polariser (13358).....	15 Days / E+ £10 - £19
Series 6 Uva.....	E+ / E++ £12
Series 6 Warm R3.....	E++ £5
Series 6 Yellow.....	E++ £10 - £12
Series 7 Cir Polariser.....	E++ £29
Series 7 Polariser.....	E+ £19
Series 7 Retaining Ring.....	E++ £9
Series 7 UV - Black.....	E++ £12
Series 7 UV/IR - Black.....	Mint- £49
Series 7 Warm R3.....	E++ £5
Series 8 Circular Polariser.....	E++ £29 - £35
Series 8 Orange.....	E++ £25
Series 8 Retaining Ring (14165).....	E++ £15
Series 8 UV/IR - Black.....	E++ / Mint- £39 - £79
Series 8 Uva + Holder.....	E++ £15
Series 8.5 Uva.....	E+ / E++ £15
Summar Light Yellow.....	E++ £15
Summitar Light Yellow.....	E++ £15
Summitar Yellow.....	E++ £15
UV/IR Filter for 18mm.....	E++ £79
Universal Polariser M.....	E++ / Mint- £179
67mm Vernier Polariser + Finder Kenko.....	Mint- £69
PL Checker (V) Kenko.....	Mint- £35
Digital Acc Base Unit M8/9/9P Body Case - Brown.....	E++ £79
BM9-B Set (For Leica M9/M9P).....	E++ £89
Camera Protector M Cognac (14887).....	E++ £75
Finger Loop Large for Handgrip.....	E++ £35
Finger Loop Large for Handgrip 14648.....	E++ / Mint- £35 - £39
M8 Hand Grip - Black 14471.....	E+ £59 - £69
M8 Handgrip - Chrome.....	E+ / E++ £59 - £65
M9 Case with Built in Grip + Deluxe Strap.....	E+ £289
Multi Function Handgrip M240 14495.....	E++ £299
Protector M10 Black (24020).....	Mint- £129
Rope Strap (19591).....	Mint- £35
CSEP Mod 1 Thumb Grip.....	E+ £49
Dioptr M +2 (14353).....	E++ £59
Dioptr M +0.5 (14350).....	E++ £59
Dioptr M +1 (14351).....	E++ £45
1.25x Viewfinder Magnifier.....	E++ £129
1.4x Viewfinder Magnifier M.....	E+ / Mint- £129 - £149
Finders 21mm Black Viewfinder.....	Exc £99
24mm Black Viewfinder.....	E+ £149 - £179
5x Magnifying Finder (16486).....	E++ £59
18mm Chrome Viewfinder.....	E++ £349
21/24/28mm Viewfinder - Black.....	E++ / Mint- £189 - £199
21/24/28mm Viewfinder - Chrome.....	E++ £199 - £219
Angle Finder M.....	Mint- £139
Mounts 16464K Focusing Mount.....	E+ £30
16469 (OUFRO) Adapter.....	E++ £30
16558Z Bellows II Lens Mount.....	E++ £25
16590 Bellows II Lens Mount.....	E++ £25
16863 M to R Bellows Adapt.....	Mint- £79
OTONO Extension Tube.....	E+ / E++ £12 - £15
OTRPO Viso Lens Tube.....	E+ £15
OUAGO Focusing Mount.....	E+ / E++ £25 - £29
Bellows II.....	E+ / E++ £55 - £79
Bellows II + 16558 Ring.....	E++ £79
Bellows II + Adapters.....	E++ £79
BOOWU M Copy Set.....	E+ £45
Visoflex II.....	E+ £75
Visoflex II Body.....	E+ £45
Visoflex II+ Vertical Finder.....	E+ / E++ £75 - £85
Heads Large B&S Head.....	Exc / Mint- £35 - £45
Large Ball & Socket Head (14110).....	Mint £129
Table Top Tripod.....	E+ £20
Small B&S Head.....	E+ / E++ £25 - £39
Lens Carrier M.....	E+ / E++ £59 - £65
M6 Leather Case.....	E+ £59
Neoprene strap (42146).....	E++ £25
Slide & Flex Strap.....	Mint- £20
Meters Macro Adapter M.....	Mint- £349
MC Booster.....	E++ £25
MC Meter.....	15 Days / E+ £35
Meter M.....	15 Days £35
MR4 Black Meter.....	E++ £149
Adapter Screw-M.....	E+ £10
Screw-M Adapter - Brass.....	E+ £15
Screw-M Adapter 35/135mm.....	Exc £20

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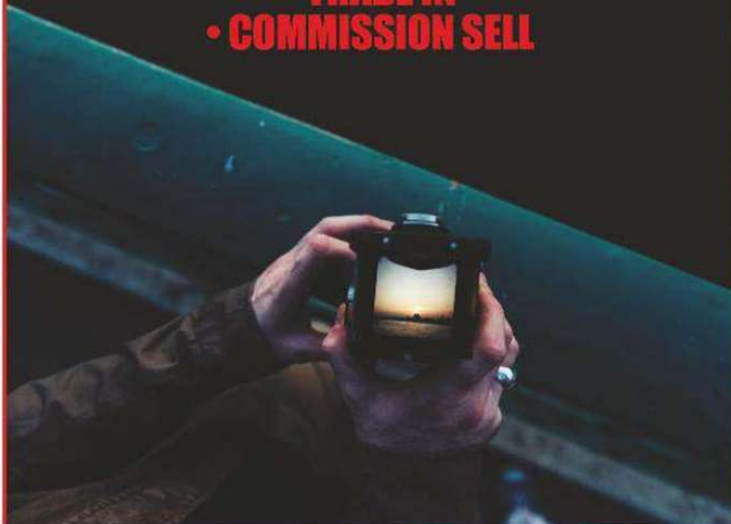
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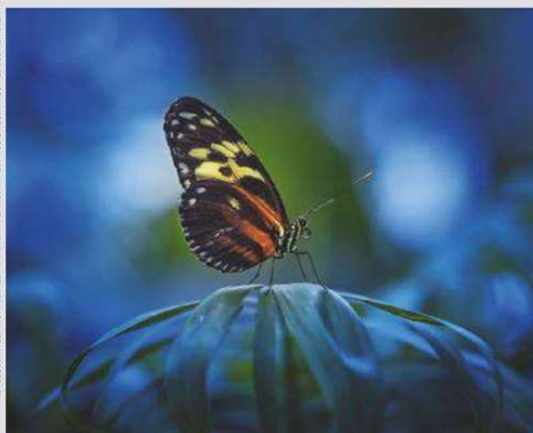
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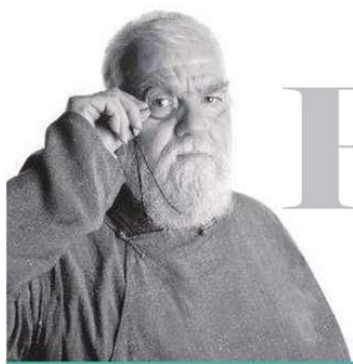
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Final Analysis

Roger Hicks considers...

'Manuel Jose Ouverney', 2017, by Thomas Brasey

Sometimes I have to look hard at exactly why I choose pictures for this column. They have to catch my eye, to be sure; but then I have to ask myself how and why they do so.

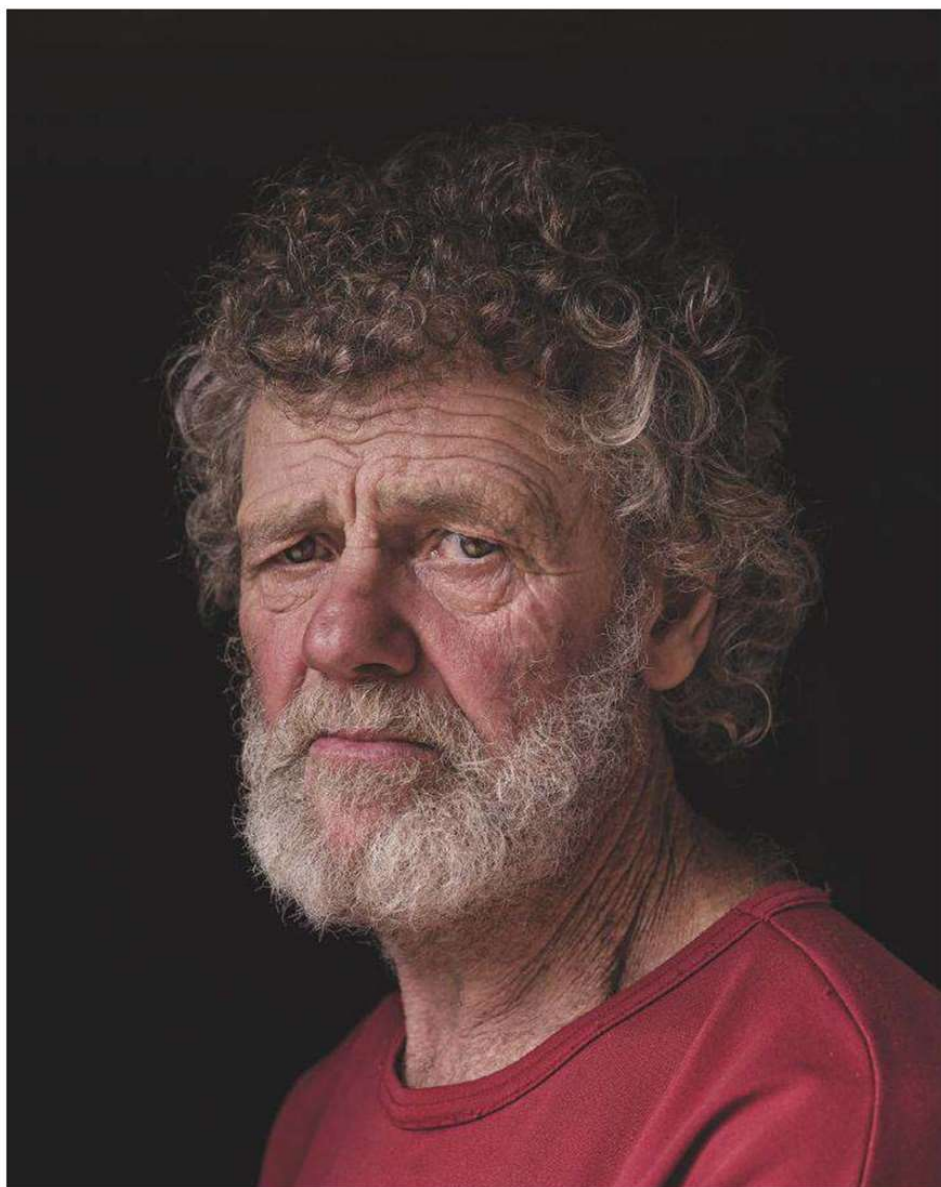
Now, I am a sucker for large head portraits, and this one is very well done. But it's comparatively easy to 'reverse engineer' the lighting. There's no backlight (see how his hair disappears against the background); the key is from camera left (look at the shadows on his nose and neck); and the lighting ratio (the difference between key and fill) is tight (the shadows are soft). The image is extremely sharp, though I'm not convinced this matters very much: it would probably have worked equally well with a soft-focus lens such as Leica's new/old Thambar. The composition is unremarkable, though its unrelenting centrality reinforces the immediacy of the eye contact. The eyes are a little above the centre line of the picture, reminding us that the eyes are far further down in the face than most people realise; a child's drawing, in particular, always places them far too high.

The real secret is the expression in the face, and the character it reveals. Or does it really 'reveal' the character? Perhaps instead it tells us what the photographer saw, or wanted to see, or wants us to see. I am reminded of the slave-era song: 'Nobody knows the trouble I've seen/ Nobody knows but Jesus', but is this a fair reflection of Sr. Ouverney?

Fascinating and intriguing

Now let's add another dimension. Imagine economic migrants fleeing starvation and political turmoil. You don't have to imagine much: it's reported often enough in the news. But Switzerland? Brasey's book *Boaventura*, published by Kehrer Verlag, is about Swiss emigrants and a town they founded in 1819 in Brazil: Nova Friburgo. It was some way from an unmitigated success. Am I seeing 200 years' history in his face? Or am I seeing what I want to see?

The words 'fascinating' and 'intriguing' are all too easy to overuse, and perhaps I do overuse them in this column. On the



'Am I seeing 200 years' history in this man's face? Or am I seeing what I want to see?'

other hand, there is so much in the world to fascinate and intrigue us. Why would I not choose pictures that intrigue or fascinate me, or that give rise to

fascinating and intriguing speculations?

Today, Switzerland is one of the richest countries in Europe. Only 200 years ago, it was one of the poorest. How did the change come about? And what does it mean when you look at individual lives? For peering into this history alone, *Boaventura* is a mightily tempting purchase; and with the addition of portraits such as this, it is even more so.



Roger Hicks has been writing about photography since 1981 and has published more than three dozen books on the subject, many in partnership with his wife Frances Schultz (visit his new website at www.rogerandfrances.eu). Every week in this column Roger deconstructs a classic or contemporary photograph. Next week he considers an image by Alice S Kandell

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